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**1998
Munitions Executive
Summit**

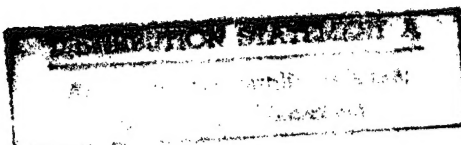
Proceedings

September 14-16, 1998

**The Ritz-Carlton, Palm Beach
Manalapan, Florida**

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Meeting # 865



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Michael B. Finnegan
Print or Type Name

IOC ACT COMPETITION ADVOCATE

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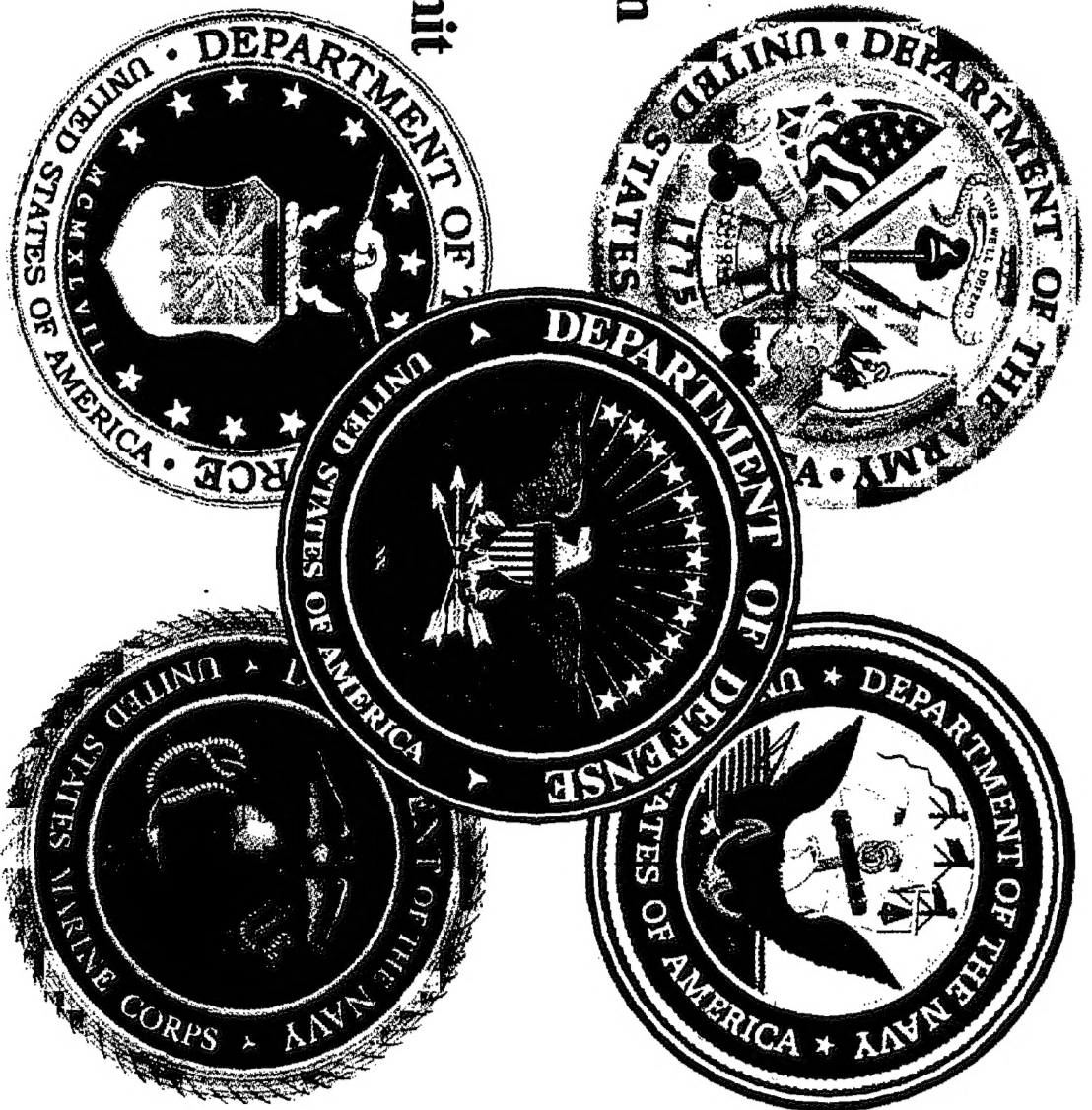
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**Ammunition Organization
Working IPT Briefing
to the
Munitions Executive Summit
15 Sep 98**

**Rod Tozzi
AMCRDA-AM**



Ground Rules

- Pacific Northwest National Laboratory study was a “launch point” only - not taken as “the” answer and not evaluated by the WIPIT
- WIPIT chartered to look at alternative organizational structures and address, to the extent possible, the degree of difficulty of implementing each
- WIPIT to determine the rough order of magnitude **POTENTIAL** for savings in terms of personnel reductions and cost associated with personnel reductions
- WIPIT built organizations on: **vision (ammo in 2003), corporate philosophy, desired characteristics, and derived attributes**. Did not build organizations based on Quadrennial Defense Review personnel reductions currently under consideration
- WIPIT provided resulting organizational constructs as **nuclei** for follow-on detailed reorganization efforts - schedules for implementation of each construct provides time for analyses of and modifications to existing processes and policies
- Use of WIPIT effort by the Army is dependent on issues or questions to be solved and the goals of the Army reorganization efforts

Voting Organizations (20)

- USD(A&T) Munitions*
- EDCA
- HQDA/Secretariat (6)
 - DCSOPS* SARD-ZR*
 - DCSLOG* SARD-ZS
 - PA&E* ASA (FM&C)*
- PEO (4)
 - GCCS*
 - TAC MISSILES
 - AVN
 - AMD
- HQAMC (2)
 - DCSAMMO/SARD-ZCA*
 - DCSRDA*
- AMC MSCs (3)
 - IOC/SMCA*
 - TACOM (ARDEC)*
 - AMCOM (IMMC)
- OTHER SERVICES (3)
 - USN
 - USMC
 - USAF

*= original WIPPT member

Overview

- Four constructs were produced that will accomplish the mission of improving ammunition management within the Army and DOD in varying degrees.
- These four constructs have been built and scored
 - Ammunition Command
 - Establishes a DSA for Ammo with Ammo PMs Under a MSC
 - PM/PEO Model w/Merged MSC
 - Joint Program Manager under a PEO (GCCSS)
 - Merges TACOM and IOC
 - Family Affair-Combat Systems
 - MACOM Restructure Merges PEO and AMC Organizations
 - Single Service
 - Ammo Organization If We Went to or Were Going to ONE Service
- Primary differences between constructs are:
 - Organization
 - Reductions associated with personnel and end-item cost
 - Ease and timing of implementation

Construct Comparison

Construct	Weighted Scores - Subjective		Manpower Savings	
	Attributes	Rating	Savings	Dollar (M)
AMMO CMD	3694	1084	139	\$14
PEO /MSC	6574	1042	1050	\$105
FAMILY AFFAIR	4811	1559	1655	\$166
Single Service	4925	1789	5373	\$537

Notes:

- Attribute rating/weighted scores - **higher** score is better
- Subjective rating - **lower** score is better (addresses the difficulty of moving to a construct of this type)
- Majority of personnel savings in PEO/MSC model derived from merging of TACOM & IOC.
- **Manpower Reductions and Dollar Savings** based on:

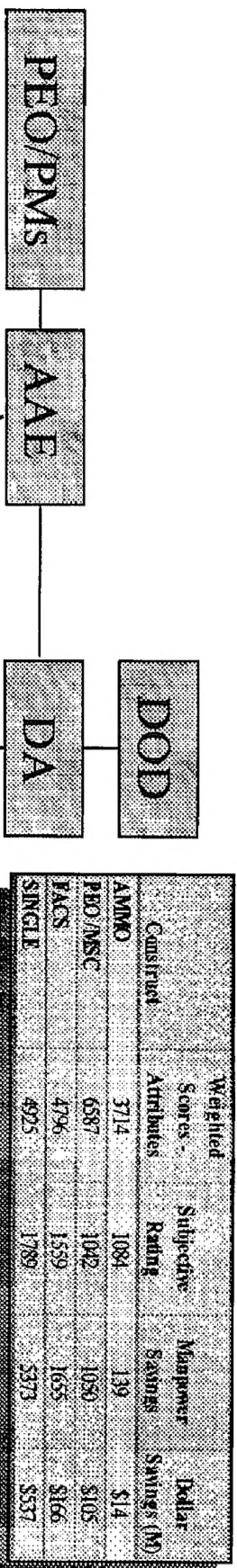
*FY97 TDAs

*No incorporation of QDR

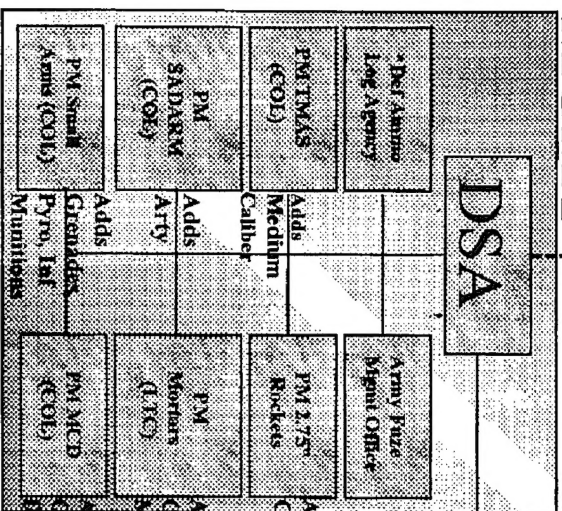
*Top line only-No attempt at MEO analysis

AMMUNITION COMMAND MODEL

Corrected Copy
18 Aug 98



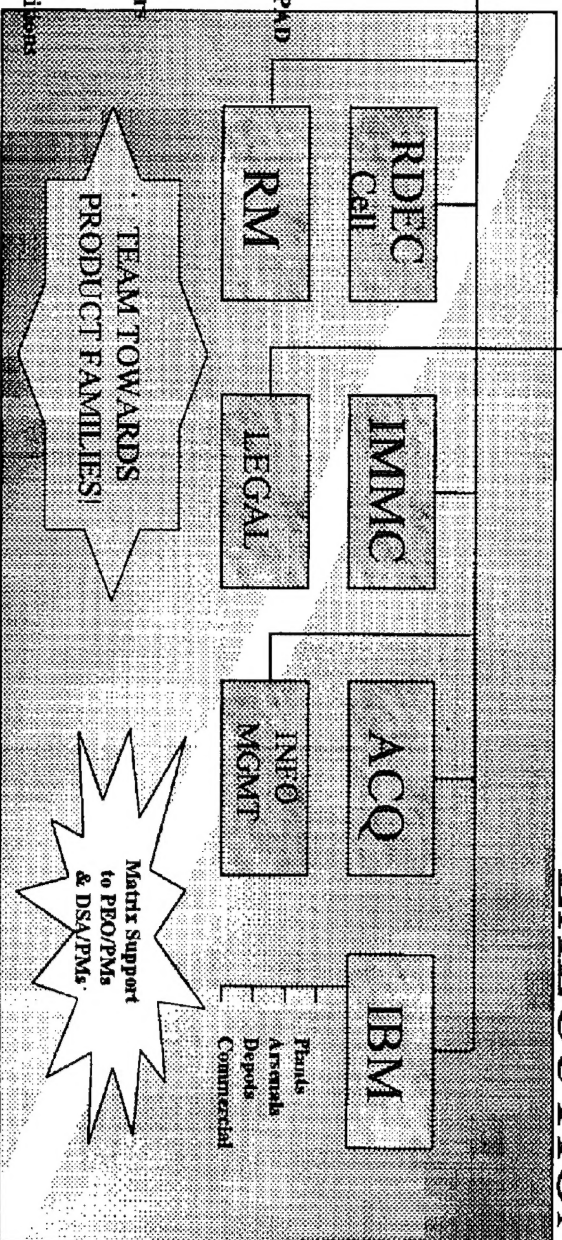
MGMT



AMMUNITION COMMAND

CMD SPT STAFF

EXECUTION



* - To be merged with DAC

(PM's are Ammo Only)

Corrected Copy
18 Aug 98

ASARDA MILDEP (LTG)

EXISTING
NEW

PEO, Ammunition & Ground Combat Systems (MG)

Ofc of Conventional Munitions Integration (COL) 2

JPO
PM Ammo & Directry, SMCA (BG) 3

PM Ground Systems Integ (COL)

PM Crusader (COL)

PM LT Wt 155 (COL)

PM Abrams (COL)

PM BVS (COL)

Def Ammo Log Agency (COL)

PM Joint Services (COL)

PM TMAS (COL)

PM SADARM (COL)

PM Small Arms (LTG)

PM 2.75 Inch Rockets (COL)

PM DENGL (LTG)

PM Mortars (LTG)

PM MCD (COL)

PM Paladin (LTG)

- 1 TACOM and IOC
- 2 Formerly EDCA
- 3 Appropriation Director

Special Staff:
* PAO
* Counsel
* EO
* Small Business
* IG

	Weighted Scores - Attributes	Subjective Rating	Manpower Savings (\$M)	Dollar Savings (\$M)
AMMO	374	1084	139	\$14
PEO/NSC	6587	1042	1050	\$105
FACS	4796	1559	1655	\$166
SINGLE	4925	1789	5973	\$597

Merged AMSC
Supporting PEO

AMC

Land Combat Systems Command (MG)

DSA (BG)

DECE for Engineering (BG)

DECE for Sustainment and Industrial Readiness (BG)

Deputy for Corporate Management

DECE for War Reserve (BG)

PM-FMTV

PM-TAWS

PM-LAV

PM-HTV

PM-LTV

PM-CMS

ARDEC

TARDEC

QA & Test

IMMC

Warren

ACALA

SMCA

DAC

IBM

Plants

Arsenals

Depots

Commercial

Other Svcs & Missiles

Information Management

Installation Support (BASE Ops)

Acquisition Center & PARC

Environmental Management

Resource Management (includes HRS)

Corrected Copy
18 Aug 98

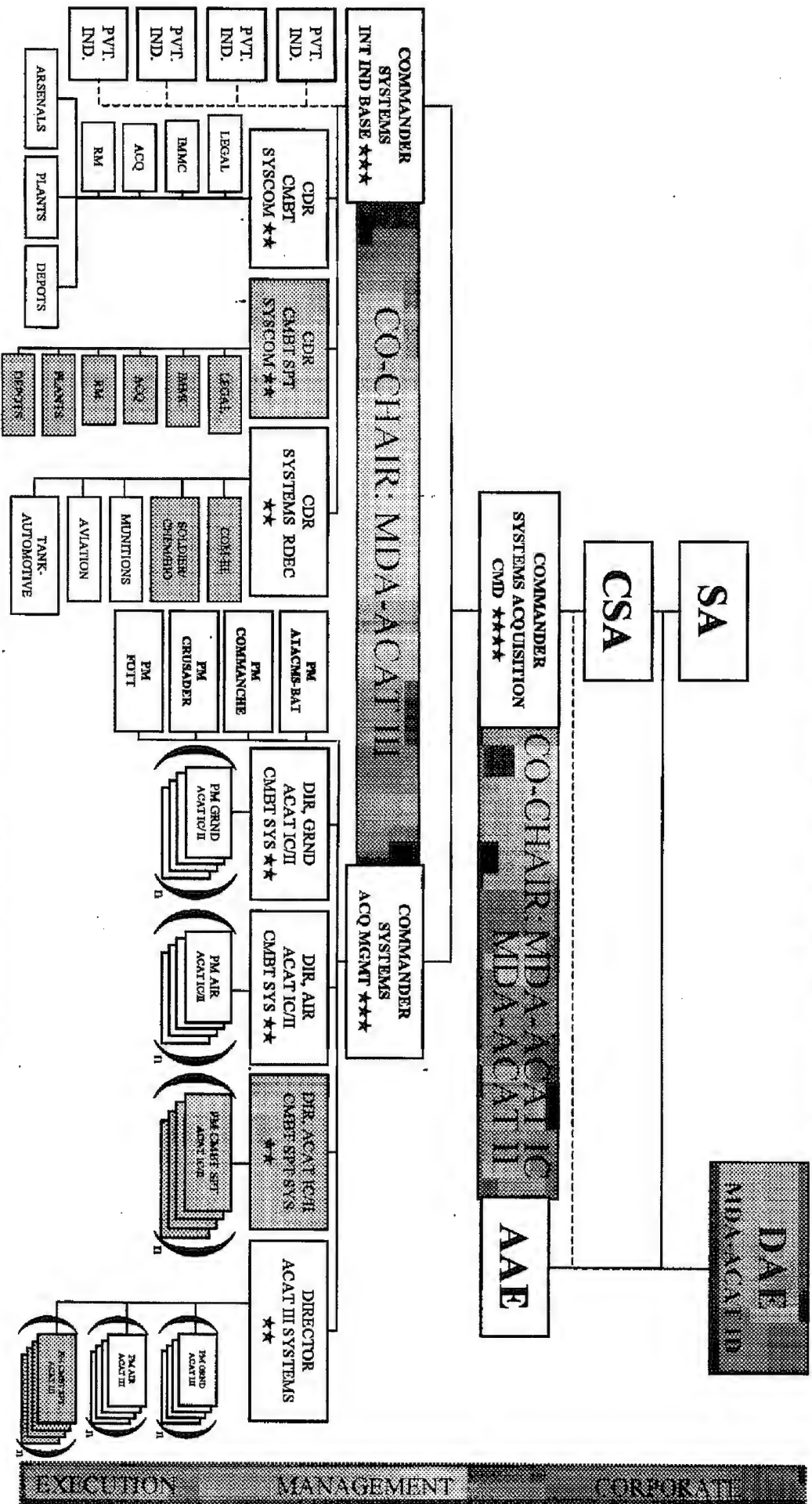
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MODIFIED



1. Integrates all elements of the industrial base (Gov and private industry) for Army combat systems and ties them to the "Corporate Best Value" decisions
 - a. Private sector utilized to the maximum, (includes tech base, RDT&E, production, transportation, handling, storage, surveillance, and demil)
 - b. SYSCOMs responsible for transportation, handling, storage, surveillance, and demil
 - c. Single RDEC for combat systems includes platforms, launchers, and munitions
 2. Ensures full system integration (platform, launcher, and projectile) for system unique munitions and full coordination with platforms for common systems-A SYSTEM OF SYSTEMS APPROACH
 3. Separates systems management from execution VERTICALLY (a continuum depending on function-the CORPORATE FOCUS) as well as HORIZONTALLY
 4. "Best Value" decisions made at the Corporate level with input from the management level which was developed at the execution level.
 5. Keeps ACAT IC programs-AAE co-chairs with Cdr. CSAC (replaces VCSA as ASARC co-chair)
 6. Could be expanded into a total "Technology/Acquisition/Logistics Command" by adding:
 - a. Cdr. Combat Support SYSCOM.
 - b. chem/bio and CIE elements under Cdr. Systems RDEC;
 - c. Dir. ACAT I/II Cmbt Spt Systems under Cdr. Systems Acq Mgmt; and
 - d. ACAT III Cmbt Spt Systems under Dir. ACAT III Systems.
- } Encl

ARMY PARADIGM SHIFT

("Family Affair-Technology/Acquisition/Logistics Command")



1. Integrates all elements of the industrial base (Gov and private industry) for Army combat systems and ties them to the "Corporate Best Value" decisions
2. Ensures full system integration (platform, launcher, and projectile) for system unique munitions and full coordination with platforms for common systems-A SYSTEM OF SYSTEMS APPROACH
3. Separates systems management from execution VERTICALLY (a continuum depending on function-the CORPORATE FOCUS) as well as HORIZONTALLY
4. "Best Value" decisions made at the Corporate level with input from the management level which was developed at the execution level
5. Keeps ACAT IC programs-AAE co-chairs with Cdr, CSAC (replaces VCSA as ASARC co-chair)

(“Single Service”)

18 Aug 98

```

graph TD
    SC["SERV CHIEF  
(CJCS)"]
    DAE["DAE"]
    CMD["COMMANDER  
COMBAT SYSTEMS  
ACQUISITION CMD  
*****"]
    MDA1["MDA-ACAT II"]
    MDA2["MDA-ACAT II"]

    SC --- DAE
    SC -.- CMD
    DAE --- MDA1
    CMD --- MDA2
  
```



- 013

WIPR ORGANIZATION COMMENTS

CONSTRUCT	AMMO CMD	PEO/PM w/ MERGED MSC	FACS/ TALCOM	SINGLE SERVICE	OTHER
ORGANIZATION					
OSD/OTHER SERVICES					
USD (A&T)			X	investigate	
EDCA		X	investigate		
U.S. NAVY	ok	ok	ok		
HQDA					
ASA (FM&C)		X			
SARD-ZS		X	serious look		
DCSOPS			X		
PA&E			X		
PEOs					
AMD		X			
AVN		X			
GCSS		X			
TACTICAL MISSILES		X			
AMC					
DCSAMMO		X			
DCSRDA		X (w/mods)			
AMCOM		X			
IOC	X				
TACOM					X
INDUSTRY					
ALLIANT		X (leads)	X (follows)		
ARMTEC		X			
TOTAL	2	13	7	1	1

STAFF DRAFT

COMPARISON OF CONSTRUCTS

CONSIDERATION	CONSTRUCT	AMMUNITION COMMAND	PEO/PM w/ MERGED MSC	FACS/ TALCOM	SINGLE SERVICE
MANAGES ALL ACAT LEVELS	YES NO	X	X	X	X
LEVEL OF PAA APPROPRIATION MANAGER	MSC/PEO MACOM DA/DOD	X	X	X	X
MUNITIONS MANAGEMENT	AMMO MISSILES	X	X	X	X
INTEGRATED SYSTEMS MANAGEMENT	AMMO LAUNCHER PLATFORM	X	X	X	X
INTEGRATES MUNITIONS INDUSTRIAL BASE via	COORDINATING OFFICE INTERNALLY	X	X	X	X
INTEGRATES TECH BASE	YES NO	X	X	X	X
SEPARATES MGMT & EXEC	HORIZONTALLY VERTICALLY	X	X	X	X
CONSTRUCT APPROVAL AUTHORITY	AMC DA OSD	X	X	X	?
LEVEL OF CORPORATE BEST VALUE	MSC/PEO DA DOD	X	X	X	X
INTEGRATES REQUIREMENTS w/LIFE CYCLE MANAGEMENT	YES NO	X	X	X	X
TIME TO EXECUTE	IN YEARS	2	3	4	8

Graybeard Comments

- Each construct addresses a different problem. A fundamental question becomes, do we address ammunition only or the larger reorganization task facing AMC?
- Separating guns from ammo is a "fatal flaw". Integration problems have arisen in sustainment as well as RDT&E and production.
- AMC PMs are second class citizens; PEO PMs make it to BG (criticizes both the Ammunition Command and the PEO/PM w/Merged MSC constructs).
- Procurement drives the industrial base which should be an issue for the uniformed Service and not the Secretariat (criticizes the PEO/PM w/Merged MSC Construct).
- Answering the critical question, "where will acquisition be in the Army organization," will shape AMC's future. Combining Technology, Acquisition, and Logistics in a single organization may be a good strategy.
- The PEO/PM w/Merged MSC construct is seen only as an incremental step; something broader will be required for a post 2002 AMC; maybe TALCOM, maybe something different.
- FACS and TALCOM may provide a way (or a spingboard) forward.
- Merging AMC and the PEOs is probably not as dramatic a reorganization move from the Army perspective as it would appear. While it [TALCOM] would be difficult politically to pull off, it would probably generate some good press for the Army just by proposing it.
- Congressional constraints will limit the Army's ability to close or privatize plants, arsenals, and depots.
- Constructs that further migrate responsibilities to Joint Agencies or the Secretariat should be resisted (specifically Single Service).
- Strong roles and responsibilities on the SARDAs side are defining characteristics of the organizational structure that would have to be clearly defined.
- An organizational change within the Army will not solve industry's problems (funding and foreign competition). However, placing the Appropriations Director at the highest level possible would assist.

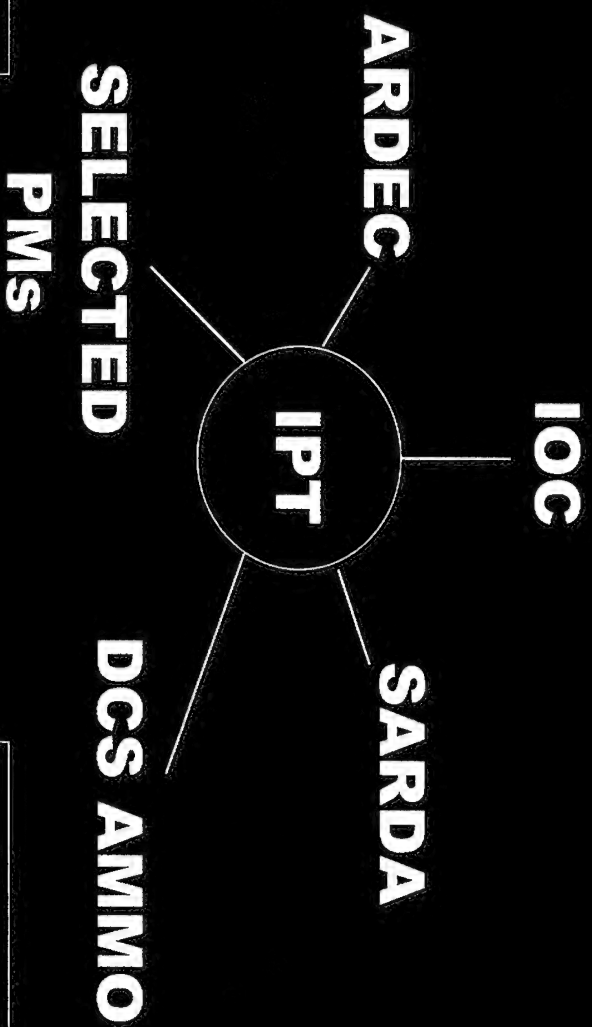
BUSINESS CASE IPT

RELEVANT



Jean L. Ligeno
Industrial Operations
Command
DSN 793-6894

TEAM COMPOSITION



Jean Ligeno
IOC Chair

RELEVANT

READY

Tom McWilliams
TACOM-ARDEC
Vice Chair

BUSINESS CASE IPT BACKGROUND

PNNL STUDY

Assess current munitions base

Ammunition Production Base is:

- Oversized
- Inefficient
- Inflexible
- Obsolete

RELEVANT

RELEVANT

READY

PNL
STUDY

BACKGROUND (continued)

GEN Wilson e-mail GEN Reimer - 28 Jul 97

- Agree in Principle with Recommendations
- Manage base through competition vs. workloading
- Commercialize organic base
- Smart acquisition practice - long term, consolidation, link peacetime/replenishment
- Consolidate munitions management

2 or 3 prototype plants

2 IPTs

RELEVANT



2 PRONG APPROACH

**AMMUNITION
FAMILY BUSINESS
CASES**

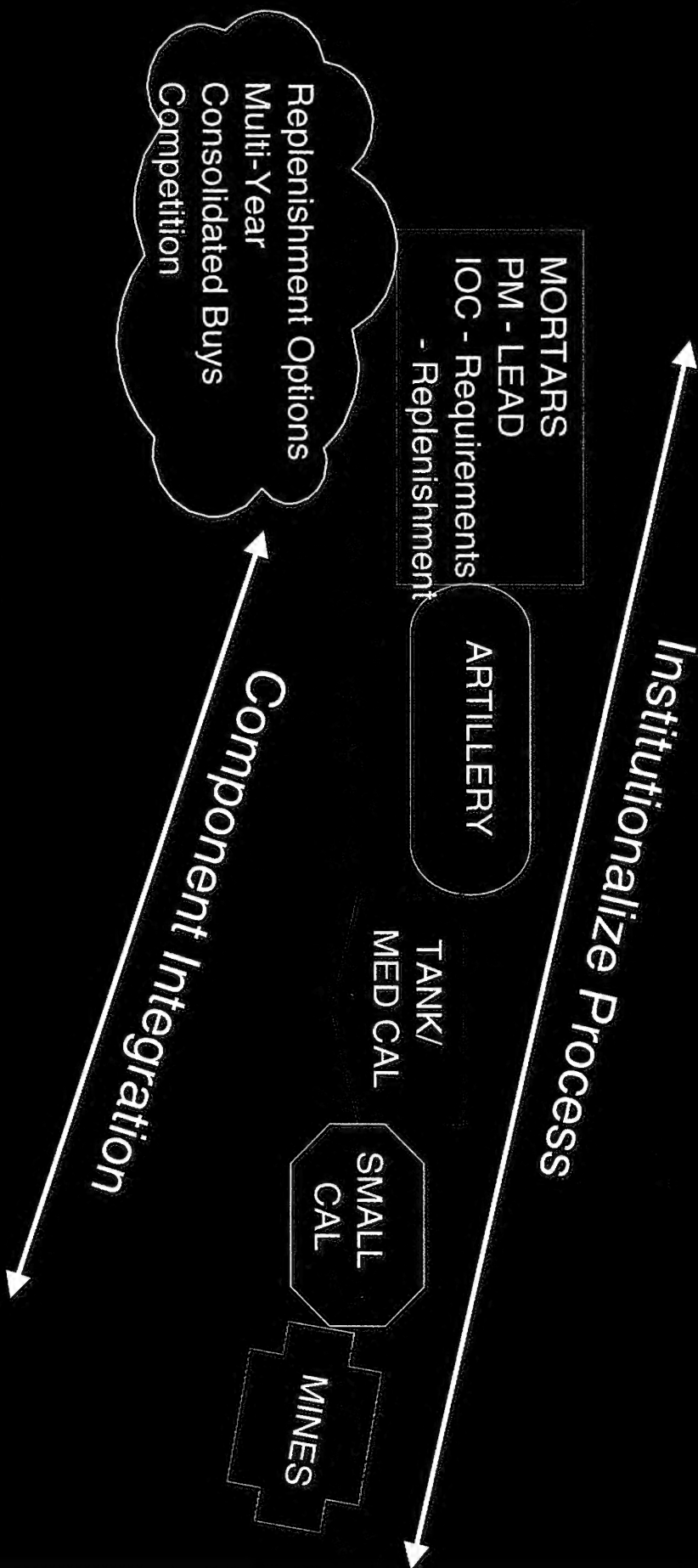
Integration

**Prototype
Plants**

RELEVANT

REPORTING READY

AMMUNITION FAMILY BUSINESS CASES



RELEVANT

RESPONSE

READY

No Cookie Cutter Approach

PROTOTYPE PLANTS PRELIMINARY REVIEW

XMAT
Active
(HOLSTON)

Louisiana
Inactive

Scranton
Inactive

On-going
Actions

Reviewed Against Site
Manager Attributes of the
Study. XMAT met 14 out of
16 Attributes. Louisiana met
12 and Scranton 10.

RELEVANT

RESPONDING WITH READY

PHASED SITE MANAGER CONCEPT

Competitive
Facility Use
Contract

Size
Base

Site Manager

Commercialization

Lease

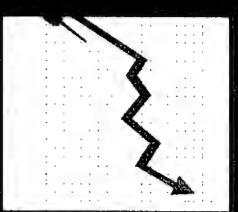
Profit
Stabilization
Threshold

Risk
Minimized

Sale

Privatization

Ammo Family Business Case Input



Actual Cases

FY 98/99	Small Caliber Competition
FY 98/00	Metal Parts
FY 02/03	Load, Assemble & Pack
FY 03/05	Propellant

RELEVANT

GETTING STARTED

READY

IMPLEMENTATION PLANNING SCHEDULE

FY97 FY98 FY99 FY00 FY01 FY02 FY 03

1234 1234 1234 1234 1234 1234 1234

Artillery

Tank/Med Caliber

Small Cal

Mines

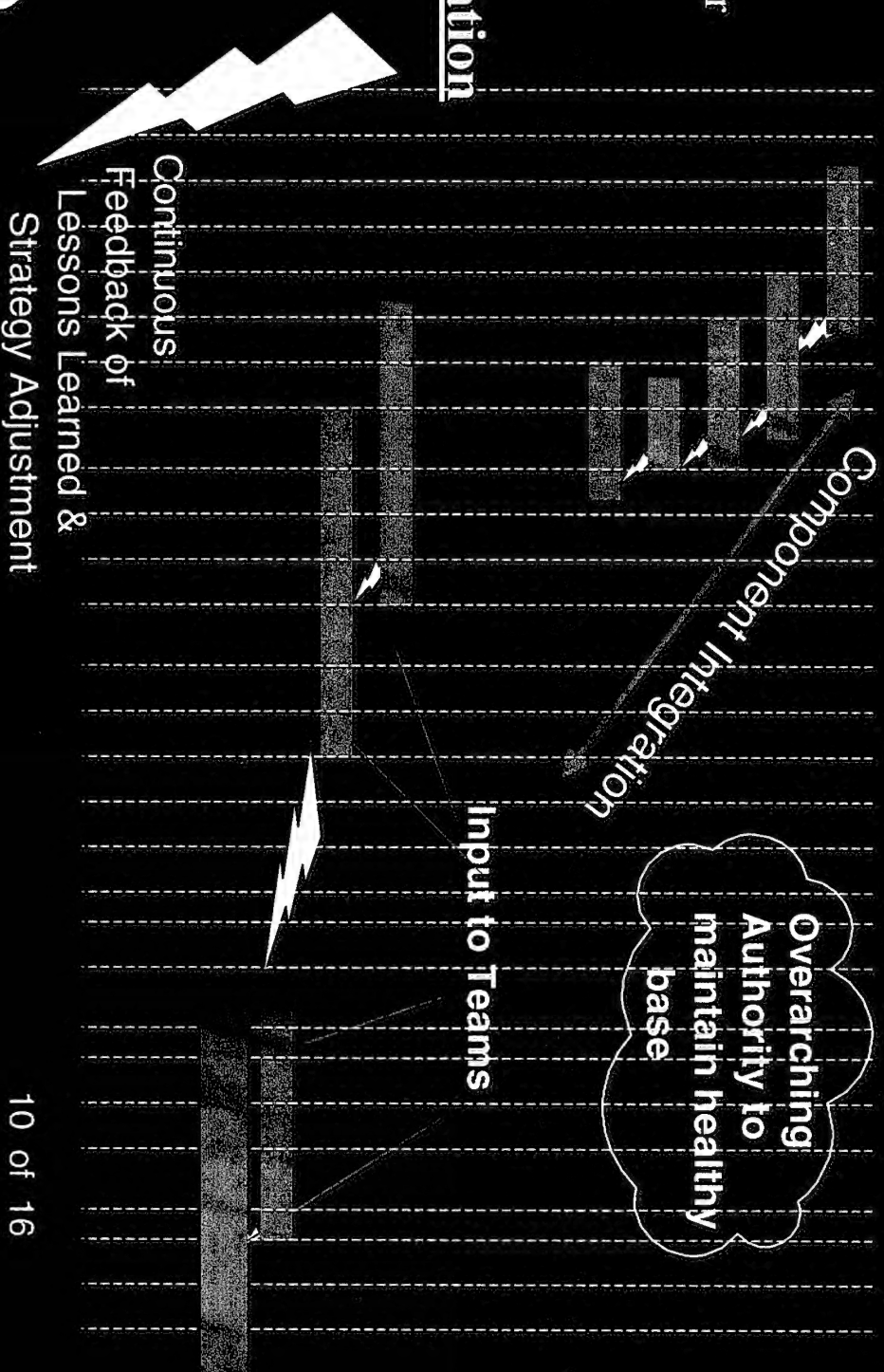
GOCO Operation

Small Cal

Metal Parts

LAP

Propellants



RELEVANT

REPORTING

READY

ITEM 1

Manage the base through competitive acquisition rather than direct workloading of plants.

ACTION: Increase Competition

EXAMPLES: IOC Plan to be out of GOOCO workloading by 2001

XMAT

Mortars

Tank Ammo

Ammunition Family Business Case

Longhorn

RELEVANT

GOOCO

READY

ITEM 2

Commercialize the organic base: Make it work for us.

ACTION: Selected prototypes.

EXAMPLES:

XMAT

Scranton

Louisiana

Proposed schedule for GOCCO

Competitions to size base.

Small Cal (LCAAP) Competition team
established.

5-Excess Plants

- Badger, Indiana, Kansas (partial), Sunflower,
Volunteer

RELEVANT

READY

ITEM 3

Stabilize the market through smart acquisition practices - longer-term consolidated procurements - link peacetime and replenishment requirements contractually.

ACTION: Started Ammunition Family Business Case Sub-IPs
Implementing Acquisition Reform
Developed methodology to incorporate replenishment into Best Value competitive contracts

EXAMPLES: Procurement Consolidation - Most med cal 25/30mm
Tank Training Ammo
M865/M831
Grenade Fuzes M213/M228
120mm Mortar

Multiple Year Procurements - (Rule rather than exception)
- Med cal (5 yrs)
Tank Training FY 95-98/FY 99-03
M550 Fuze
Hand Grenade Fuzes M213/M228
120mm Mortar

RELEVANT

FOR ONGOING

READY

POLICY

SARDA 98-1

- **Manage ammunition using DOD's life-cycle acquisition process.**
- **Use acquisition reform initiatives to stabilize the business environment and provide incentives for private investment in the production base.**

RELEVANT

REFORMS

READY

POLICY SARDA 98-1 (CONTINUED)

- Rely on the private sector to create and sustain ammunition production assets in response to production and replenishment contracts.
- To the maximum extent feasible, transition government-owned ammunition production assets to the private sector while preserving the ability to conduct explosives handling operations safely.

RELEVANT



CONCLUSIONS

1. Developed timeline for completion of Ammunition Family Business Cases and actual ammunition plant cases.
2. PNNL recommendations will work for some families of ammunition and plants but cannot be a cookie cutter approach.
3. Site Manager Concept needs to be a phased approach.
4. Army initiatives already underway match PNNL recommendations.
5. IPT will be dissolved and monitoring of the planned actions will be accomplished by DCS Ammo.

RELEVANT

REPORTING

READY



SOUNDBYTES



Munitions Executive Summit

☼ 50 Years of base adjustments

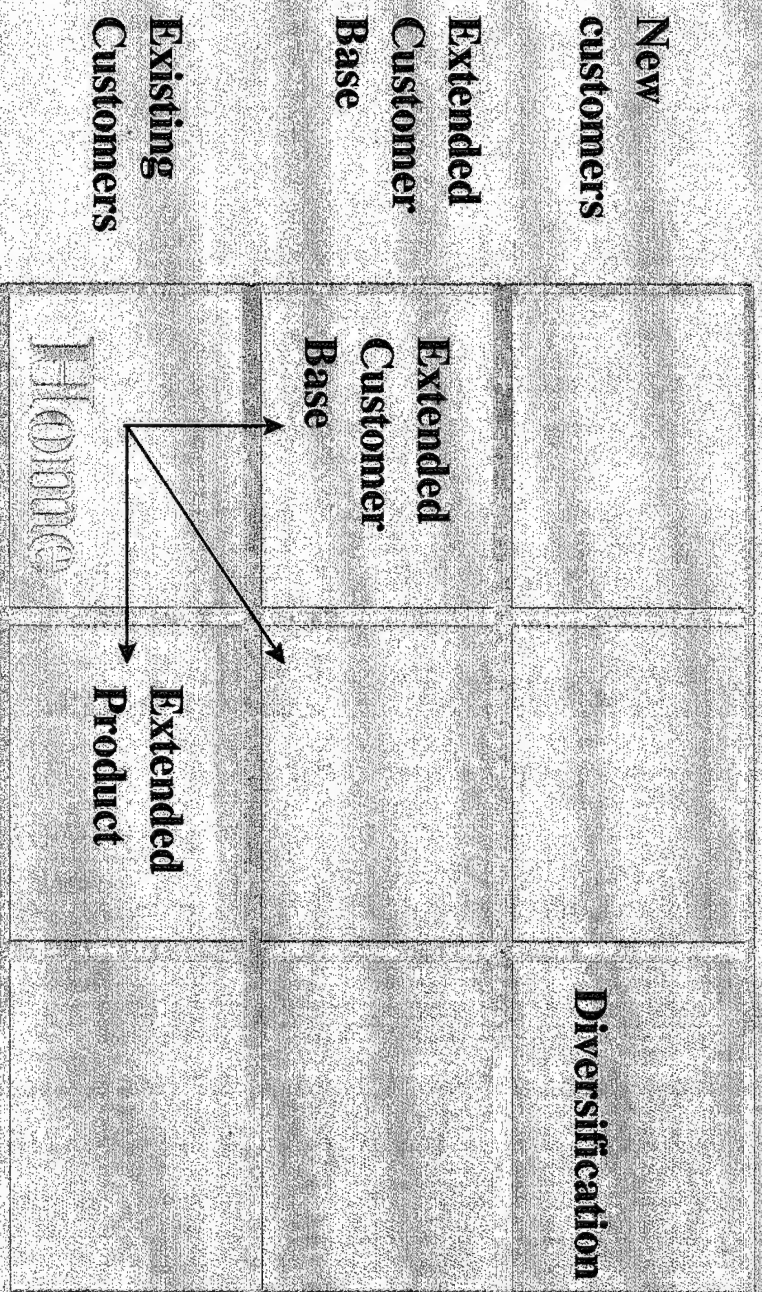
- WWII

- Vietnam

- 1998 - Talley Defense Systems

☼ Semon

Business Spectrum



Current Improvements New

Product Technology



Business Spectrum

- ⦿ **Products:** Hardware, Warranty, Service, Quality, Rate of Technological Change, Regulations, *Product Liability*
- ⦿ **People:** Skills, Wages, Benefits, Education
- ⦿ **Plant:** Environmental, Location, Transportation
- ⦿ **Market:** Competition, Brand Loyalty, Sales Methods, Credit policies, *Buying Motivation*



Consumer Motivation

⦿ Aren't you glad you
use Dial. . . don't you
wish everyone did?"

After the thousands of overnight arrests, people like the *Friends of Animals* noted that the cable people got a scare from the "structural problems" that would have kept them from being able to provide the cable. It is reported that the cable was being flown in by sea from the south of England. But surely that has undermined the financial damage to accept. Despite the enormous savings,

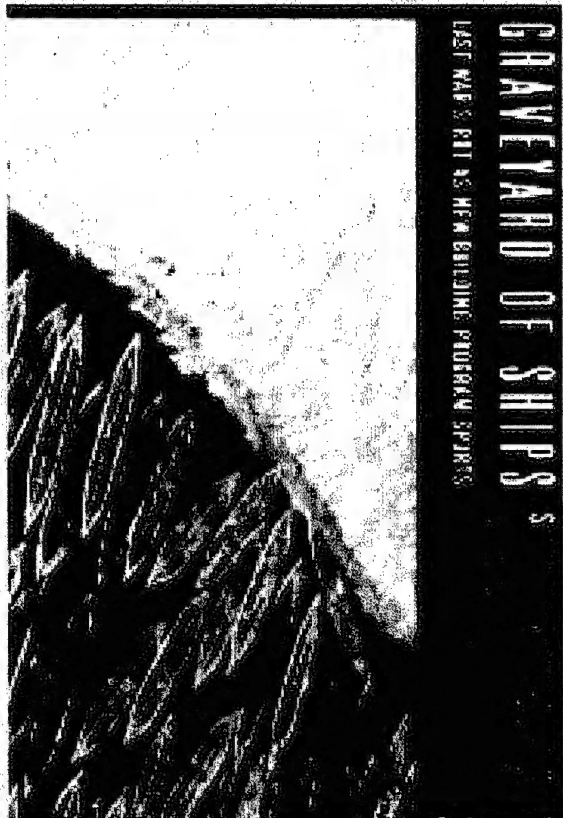
1950's Presidential Image



Shipbuilding Miracle - Kaiser

GRAVEYARD OF SHIPS

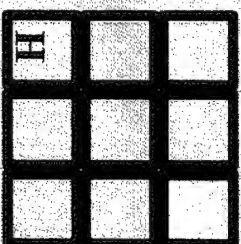
LAST MAJOR FLEET AS NEW BUILDING PROGRAM STARTS



- *Liberty ships
- *Escort carriers

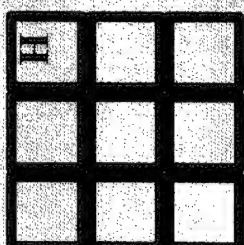


Kaiser's Lament

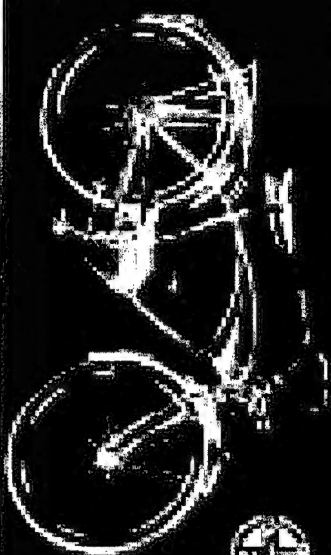


“I knew it would be risky, but I never expected my \$400 million to disappear into the automotive pond without even a ripple.”

J.C. Higgins



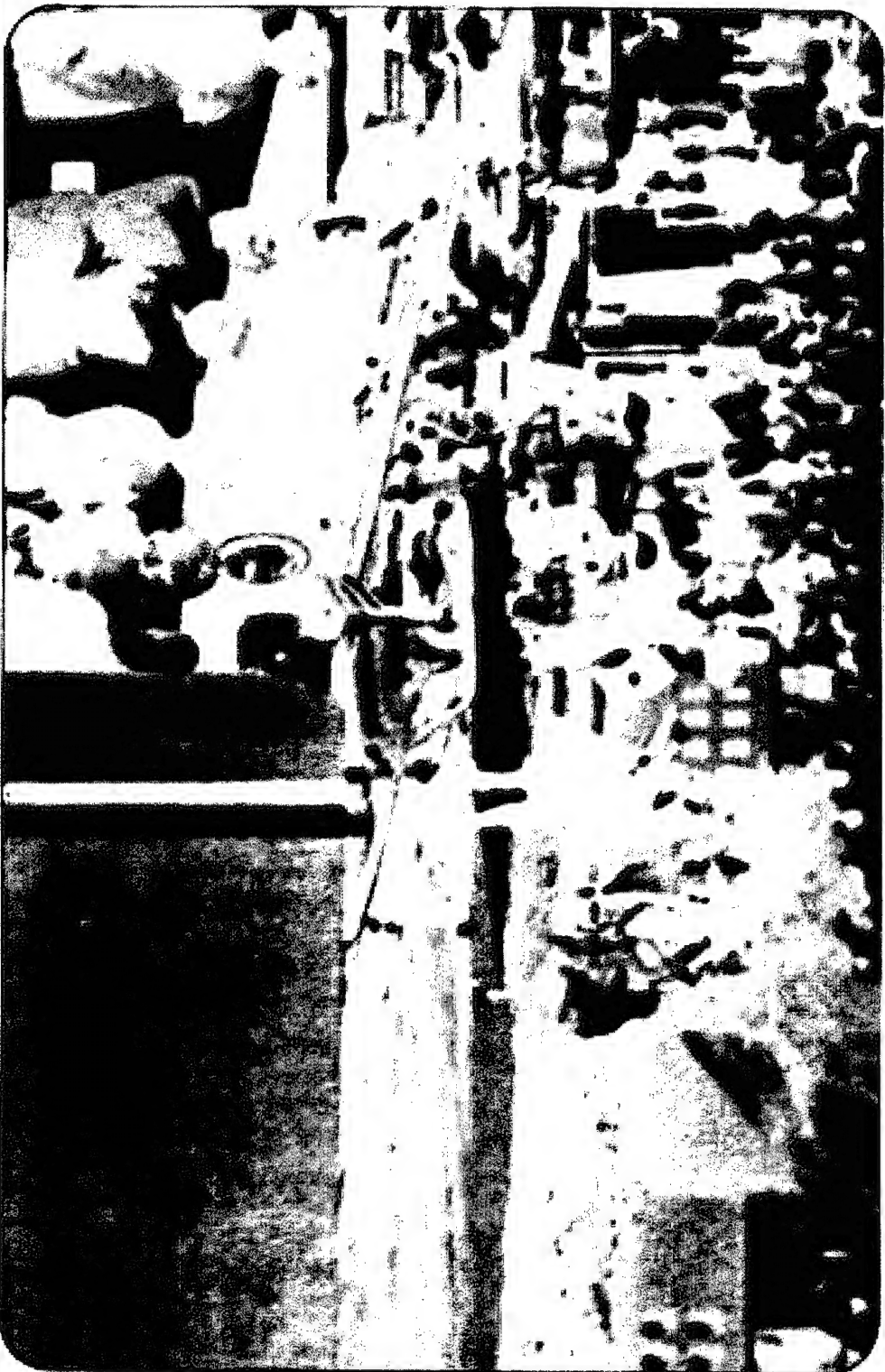
Schwinn Built Bicycles
GUARANTEED FOR LIFE

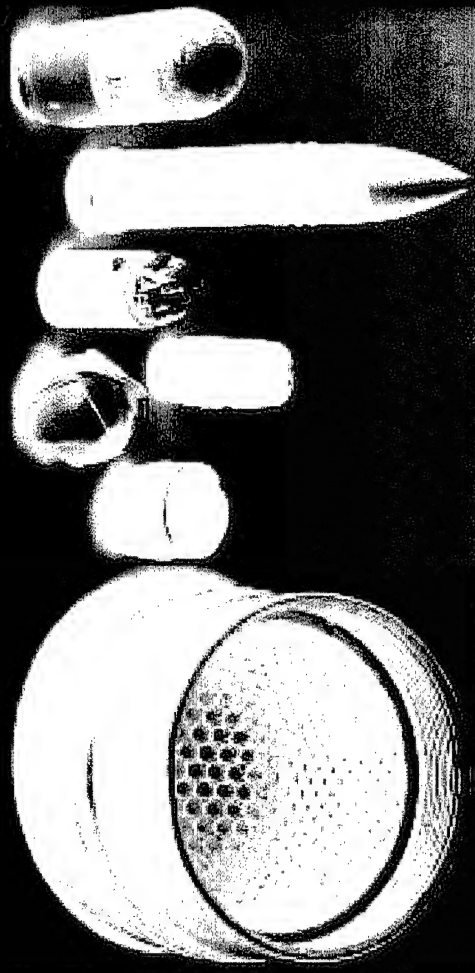
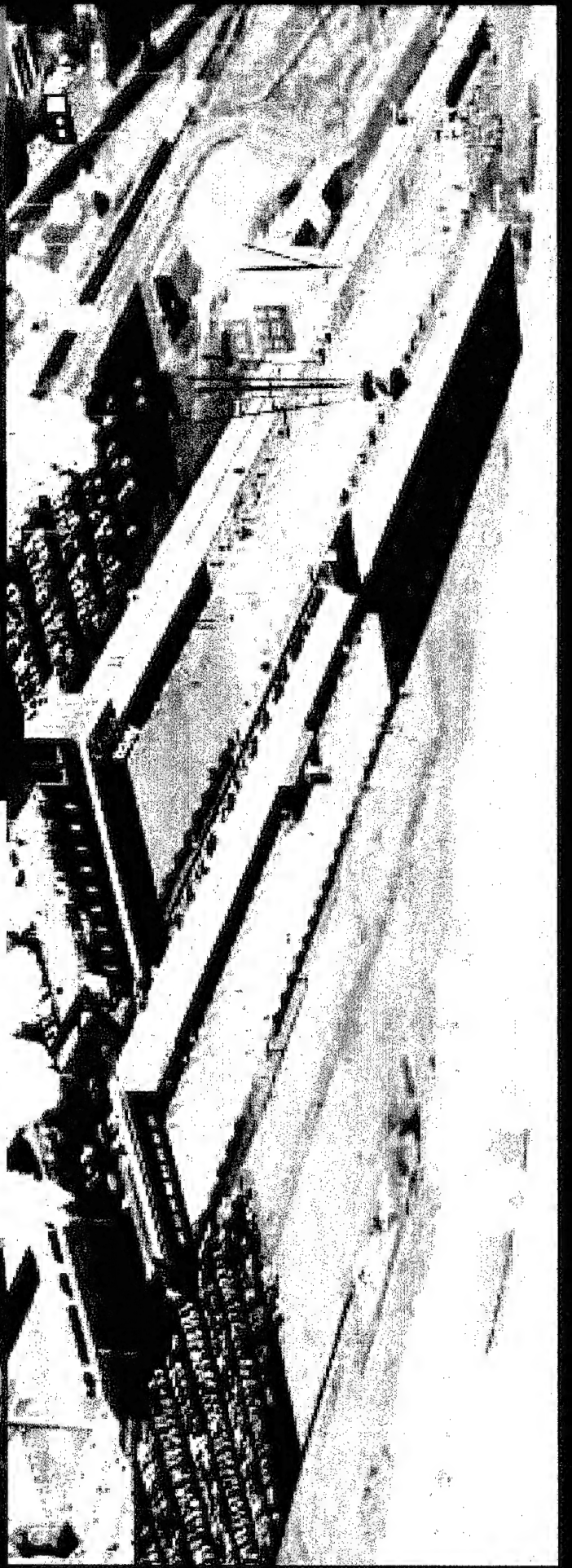


Schwinn-Built Bicycles
GUARANTEED FOR LIFE

JC Higgins bikes never made Schwinn sweat!.

Vietnam Era



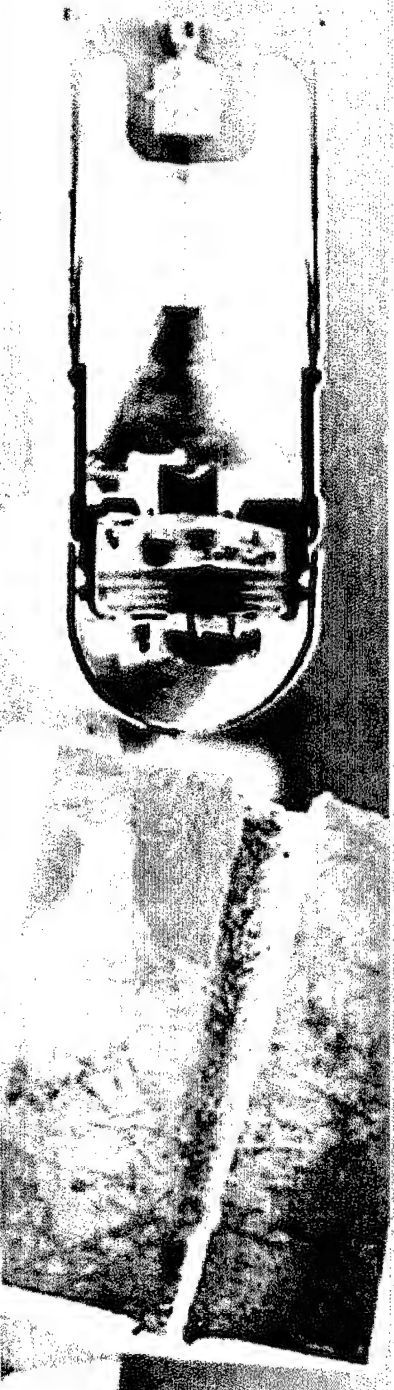


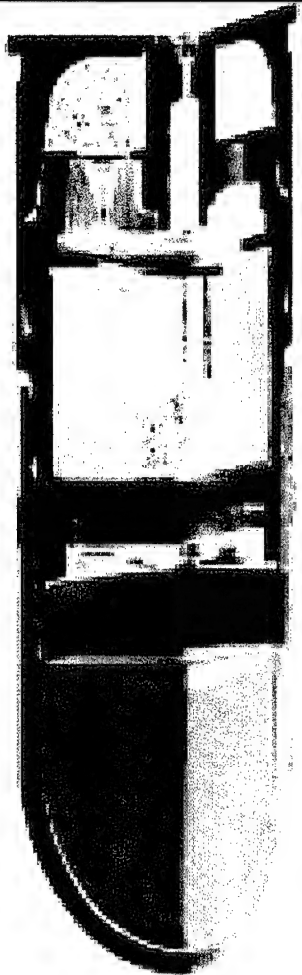
AVCO ORDNANCE DIVISION



AVEO Developments

- Cost effective, “Cavitating” fragments
- ICM munitions
- 40mm DP ammo - first used in Desert Storm
- M42/M77 grenade - “Steel rain”





XM683

MAXIMUM RANGE 220 METERS
WEIGHTS 4.25 POUNDS
STOPS 4000 FOOT FIRE
4000 FOOT FIRE
IN 10 SECONDS



XRM79

MAXIMUM RANGE 220 METERS
WEIGHTS 4.25 POUNDS
STOPS 4000 FOOT FIRE
4000 FOOT FIRE
IN 10 SECONDS

- Line of sight 40mm
- Behind wall effects

- Dual Purpose

- Grenade insertion

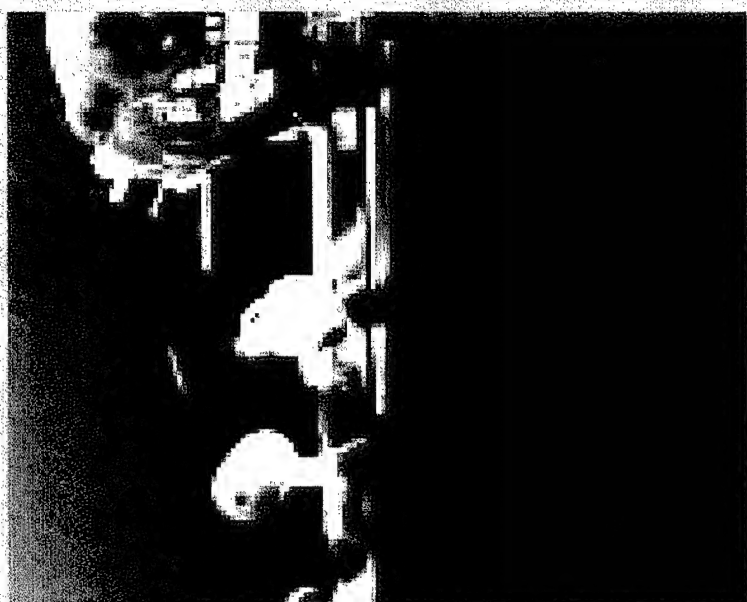
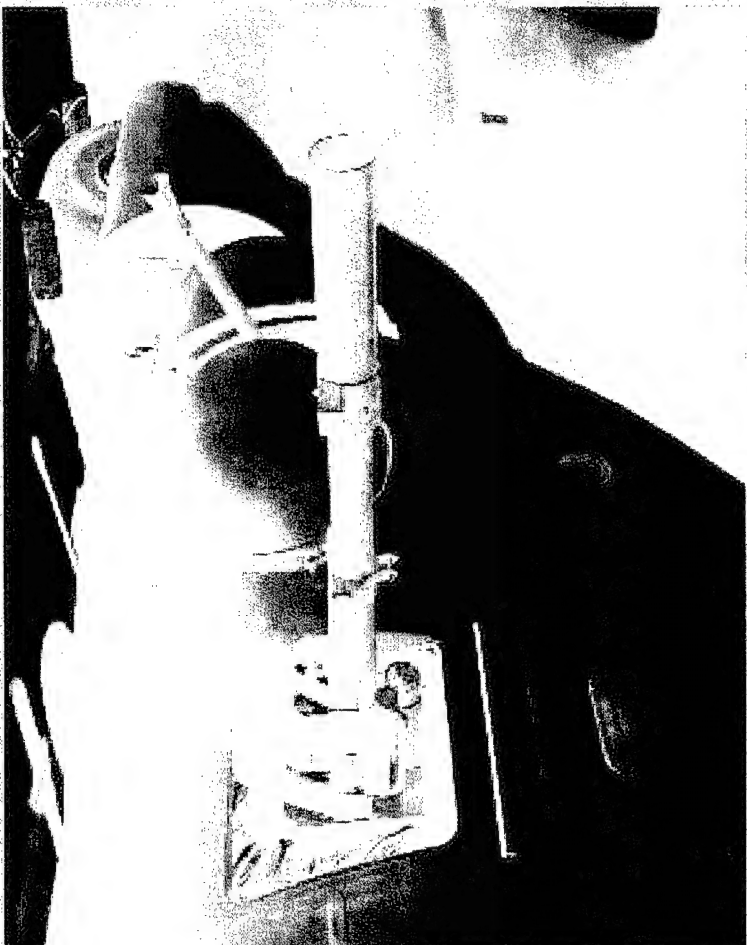


XRM79 Dual Profile

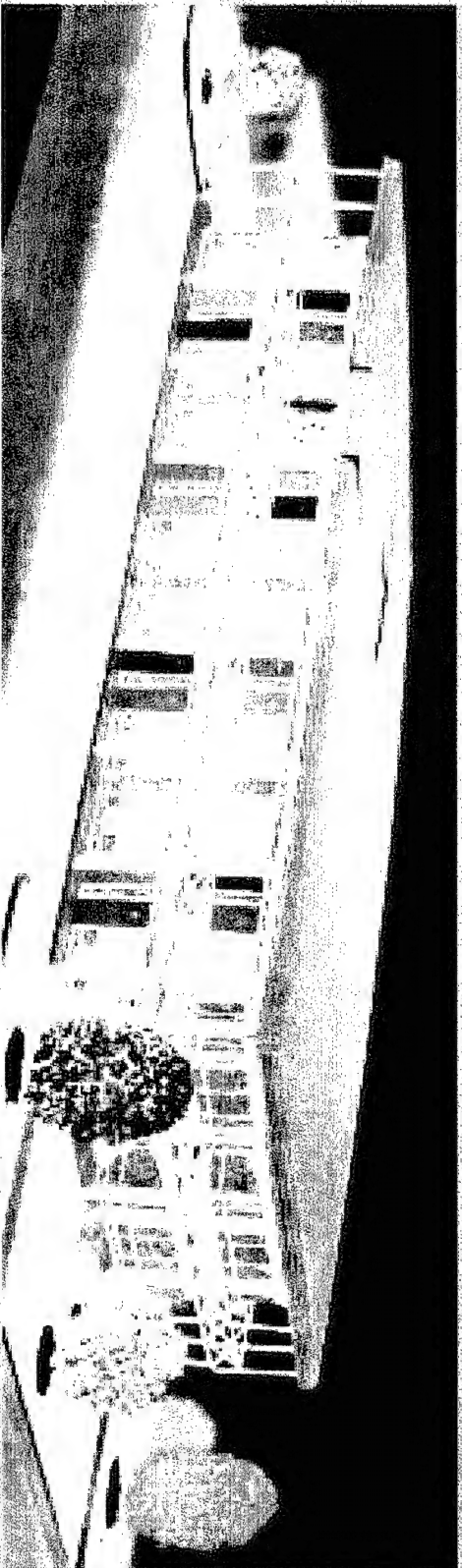
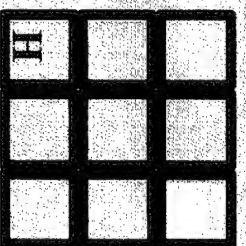


Other AVCO Contributions

☼ Initial mounts of both 40mm Bofors and 105mm on USAF gunships



Modular Motel units



-
- Dedicated 25% of factory space
- Built four motels
- Hidden costs killed program

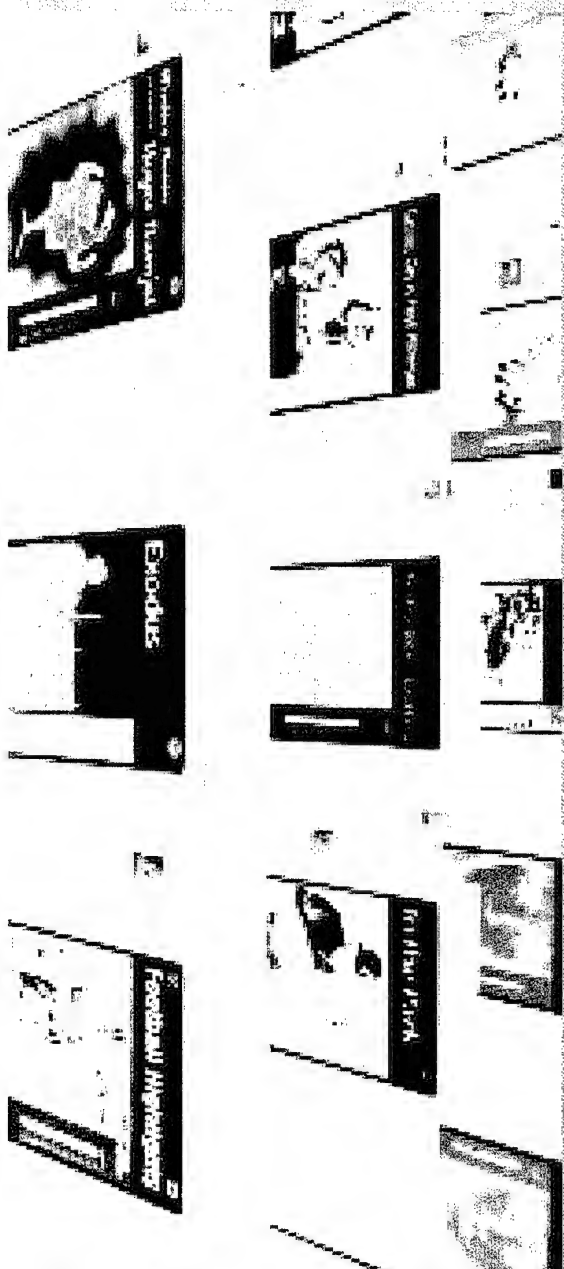
Consumer Product Lure

- Early TV maker - Competition victim
- AVCO Embassy motion pictures stockpile
- Cartrivision Patent License
 - Three head tape playback system
- 200,000 sq. ft. NASA level "Clean room"
- AVCO isolated from marketing & sales
-



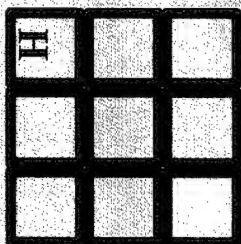
Proslav (subent)

Cartrivision



CARTRIVISION 

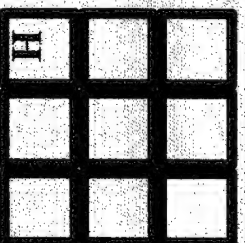
Cartrivision



CARTRIVISION

A unique way of looking at things.

Results



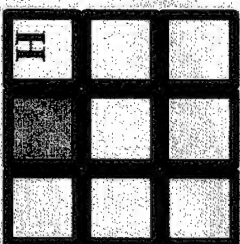
- 2800 units manufactured
- Engineering changes (tape head problems)
- Sears - Chicago first outlet
- Sales training cancelled
- Sold to consumers - 0
- Died in Fall 1972



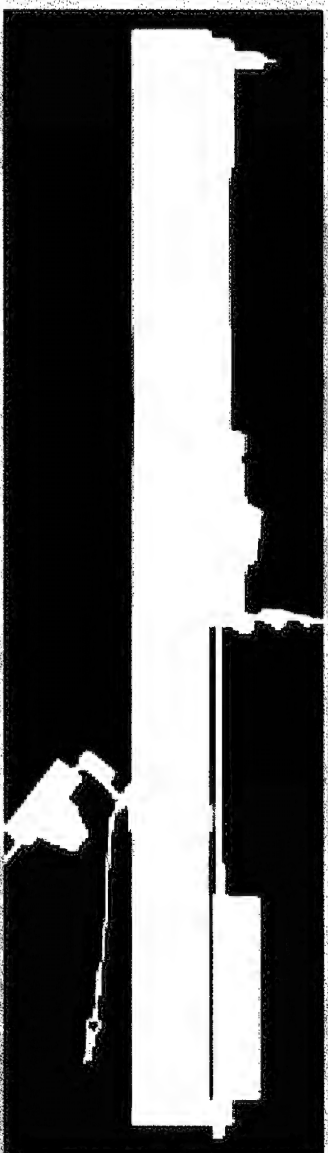
AVCO Precision Products

- Shutdown announced January 1973
- Closed by Jan 1974
- 40mm rocket boosted, ICM self-destruct, other ordnance development stopped

NI Industries Brockton, MA



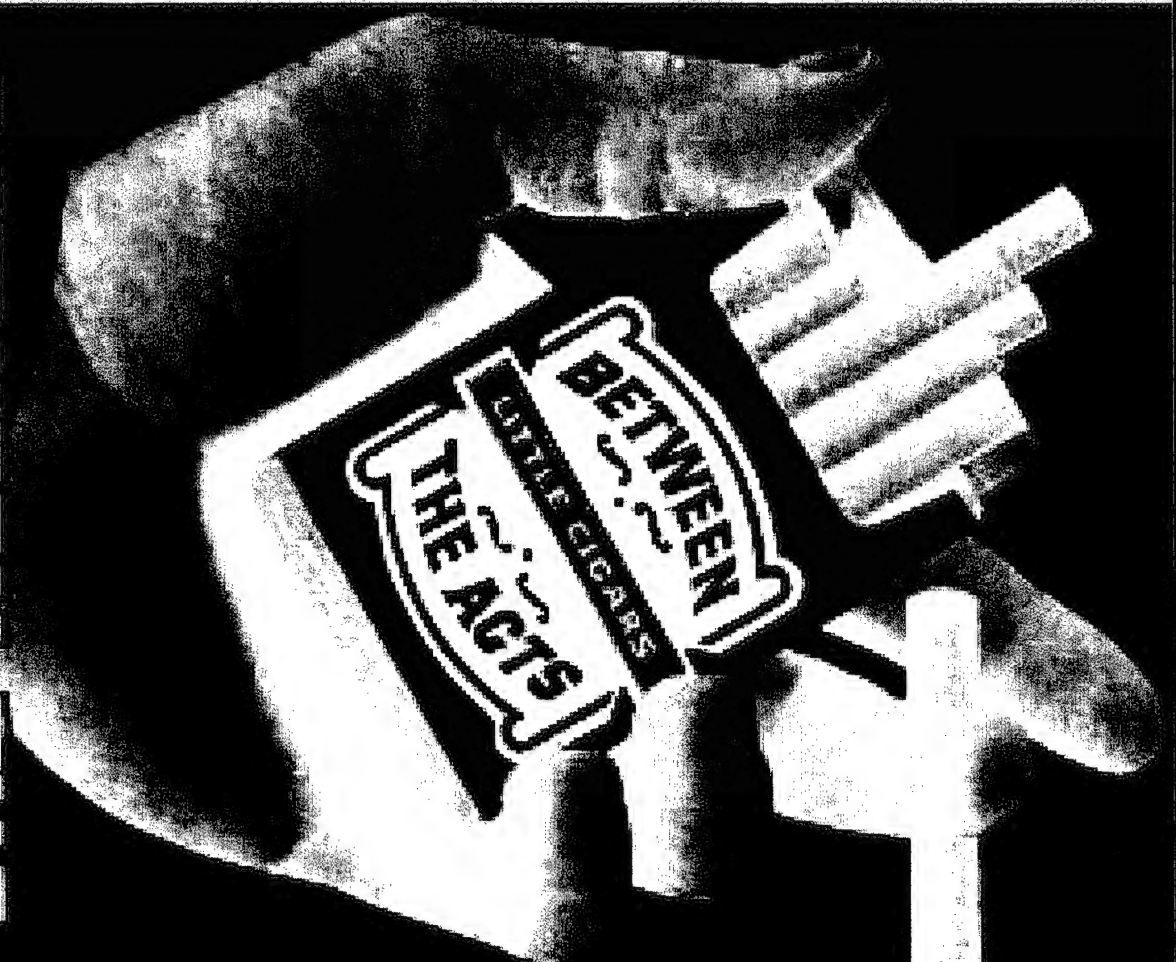
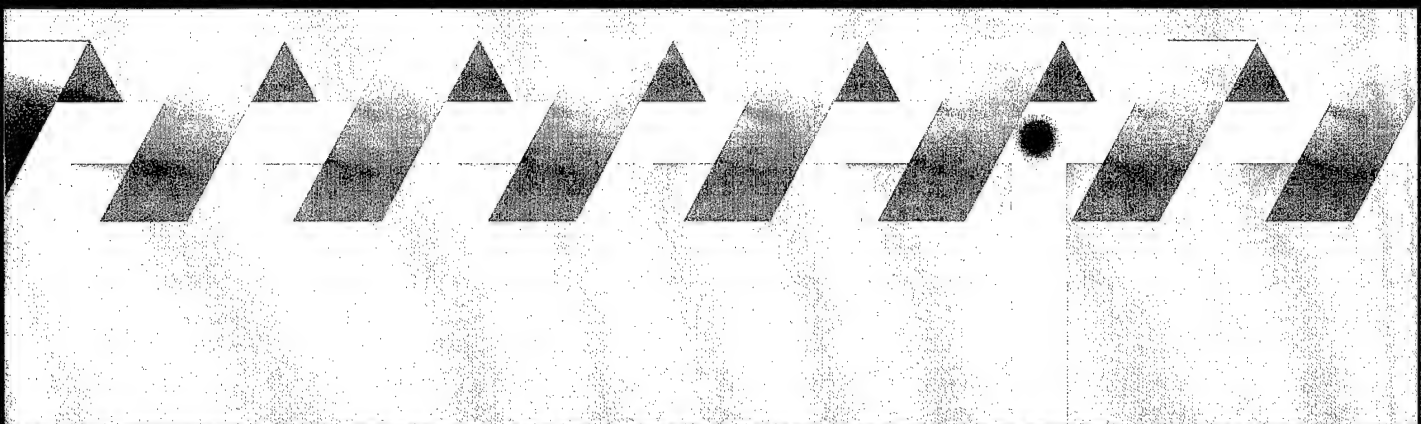
- Source for M72 launchers
- Converted at end of Vietnam
- NI Thermador (Luxury kitchen appliances)
 - Exhaust Systems
 - Compactors
- Products eventually went to Mexico





Post Vietnam Changes

- US Auto market penetration
- Erosion of US national hard goods base
- World market awakens (Mexico \$10/day),
China, Eastern Europe, PACRIM



Puff

lightly...

you

need not

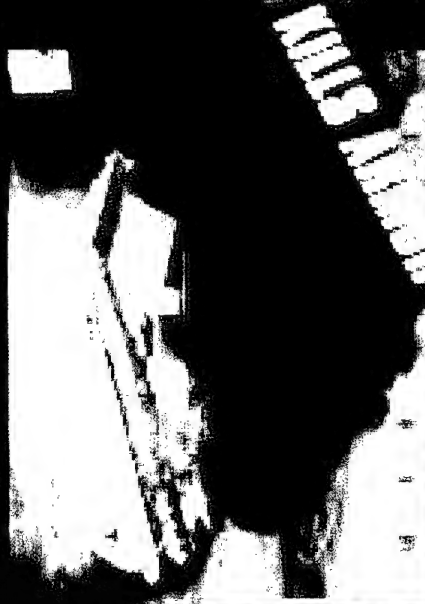
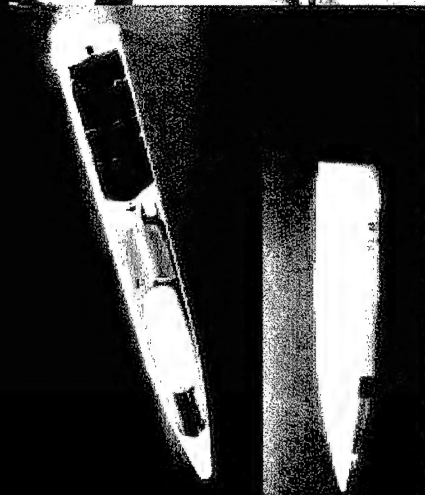
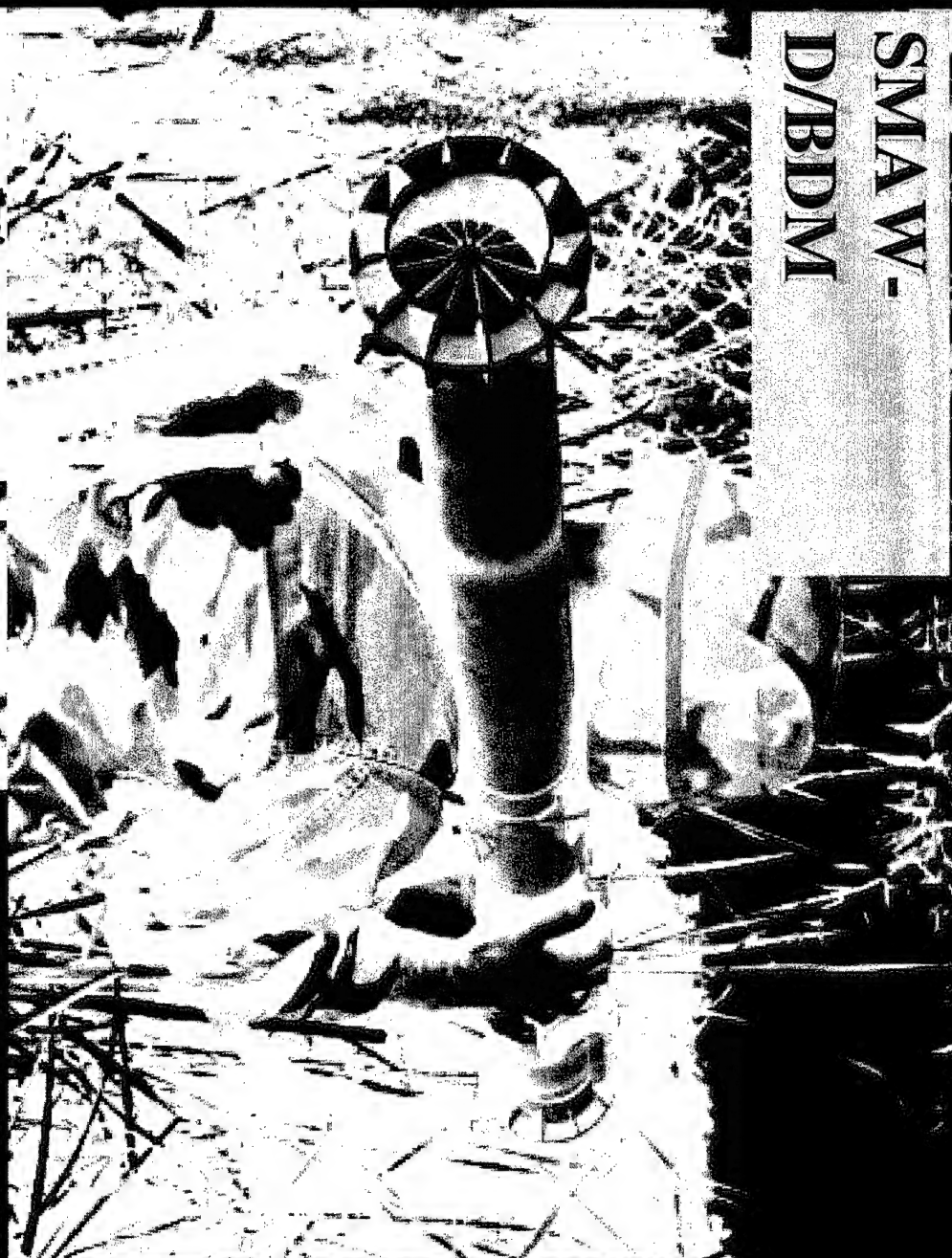
inhale

to enjoy

BETWEEN THE ACTS

LITTLE CIGARS

SMAW- D/BDM





Talley Commercial Programs

- Auto airbag pioneer (Late 1960's)
- Transferred airbag technology to defense products (munitions dispersion)
- Escape slide inflators
- Fire suppression

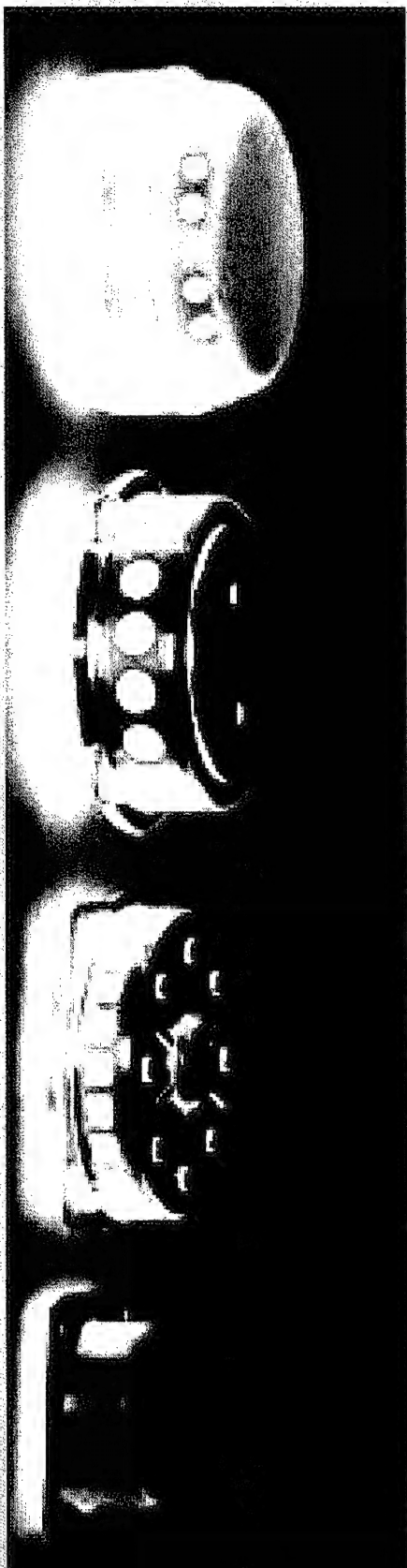


Talley Airbag Milestones

- Invented Azide propellants
- Talley Market Share 1989 100% Ford driver; 80% GM driver; & 100% Honda Driver
- 1989 - Sale of airbag to TRW (\$ Hundreds of millions in sale & royalties)



Charts showing inflator progression



Early 70s

Late 70s

Late 80s

Present



Post TRW Era (1994)

- Talley develops non-azide inflator
 - Smaller, simpler
 - Less costly
 - Tighter performance
- Re-entered maturing market
- Formed Delphi (GM) JV
- Achieved re-entry in four years

Talley Template

- Internal diversification
- Dual use propellant capability
- Technology development (Engineering, Propellant)
- Manufacturing advances
- Quality (CP2, ISO, QS)
- Marketing & sales

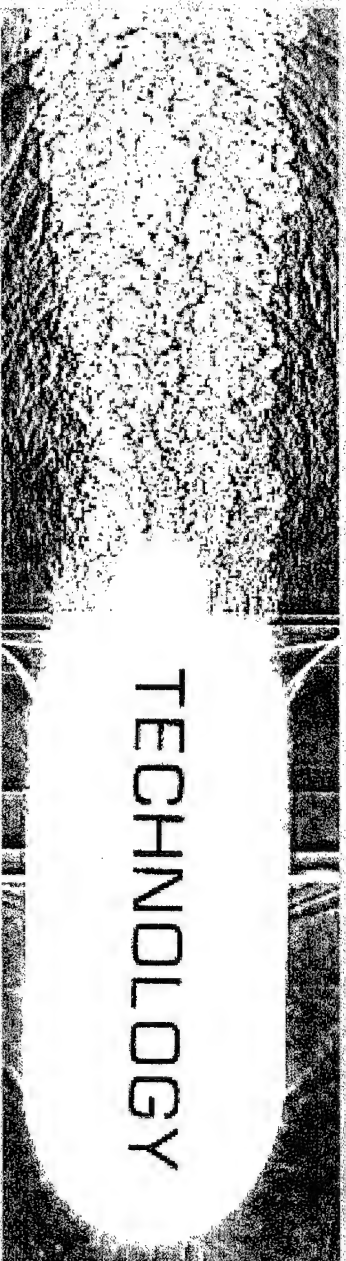
Markets

H		

Products

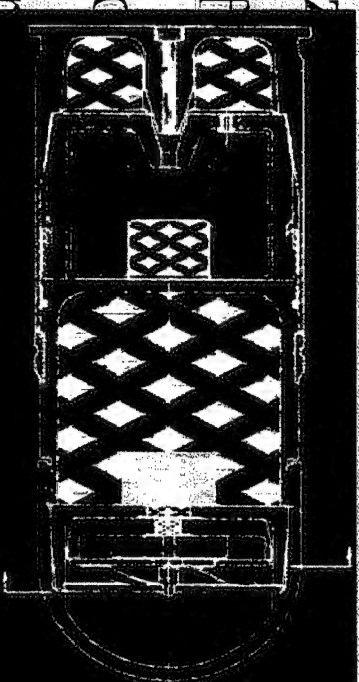
Success lies in extending...

What does the Army lose when the base is gone or too weak?



AVCO Examples:

- Rocket ammo technology
- Grenade insertion
- Time to fire fur
- Behind target ef
- Dual Purpose ro
- ICM self destr





Most Probable Threat Reality [MPTR]

- **MPTR is no mystery**

- 1. OPTEMPO deployments (OOTW-Close combat, & Artillery fan fire support)
- 2. Missile defense
- 3. Terrorism
- 4. Longer term needs (Countering Peer battlefield adversaries)



Balance

- Situational awareness (**SA**) kills nothing
- SA supported by effective weapons and ammunition mean capable defense
- *Balance* among SA, Leap ahead & effective close combat and fire support fan lacking
- *Too much* leap ahead is unaffordable
- Close combat technology base unsupported



Challenges For Army & Industry

- There will be no defense without a balanced industrial base
- Technology moves forward, even if America ignores it
- DoD /Army have stake in the defense industry freefall

Signs



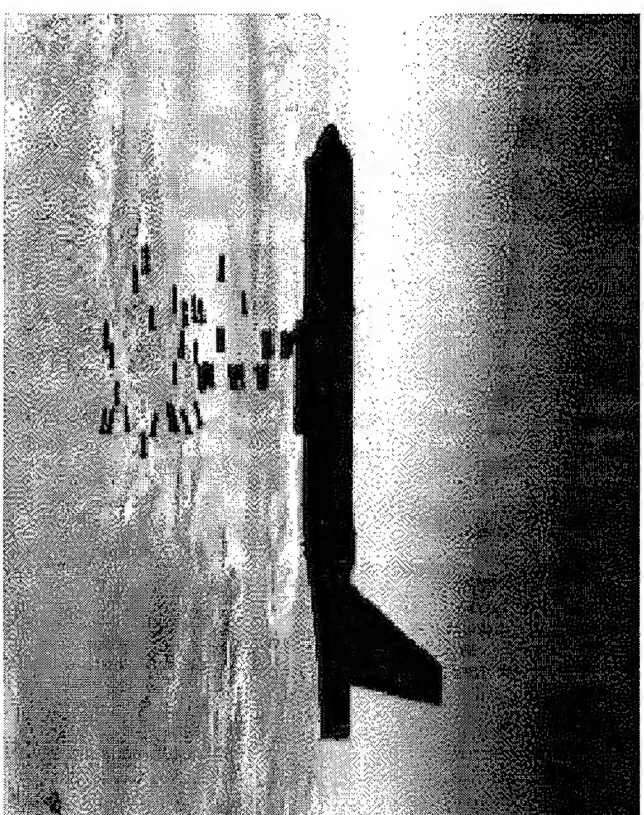
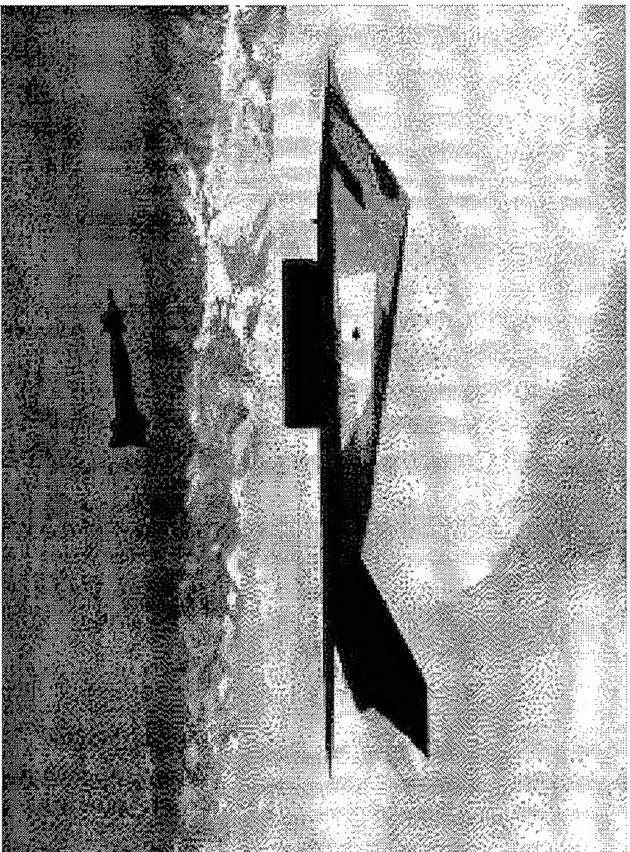


Summary & Sermon

- ☉ Insufficient hard goods industrial base means insufficient combat power.
- ☉ Restore spending balance (SA/Leap ahead & killing systems)
- ☉ Forge hard goods base preservation policy - suddenly



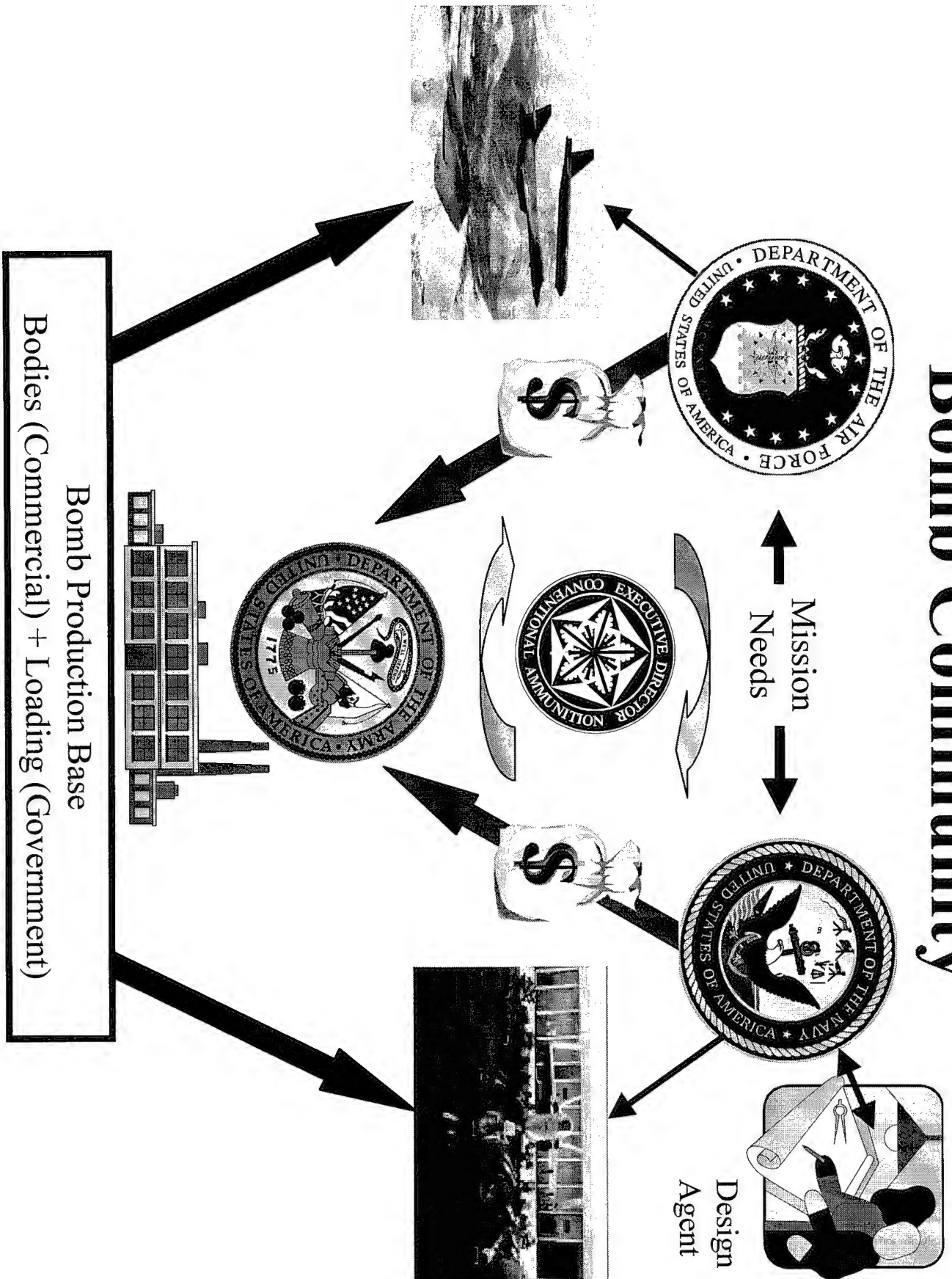
Col Paul Brandenburg, USAF
Deputy Executive Director



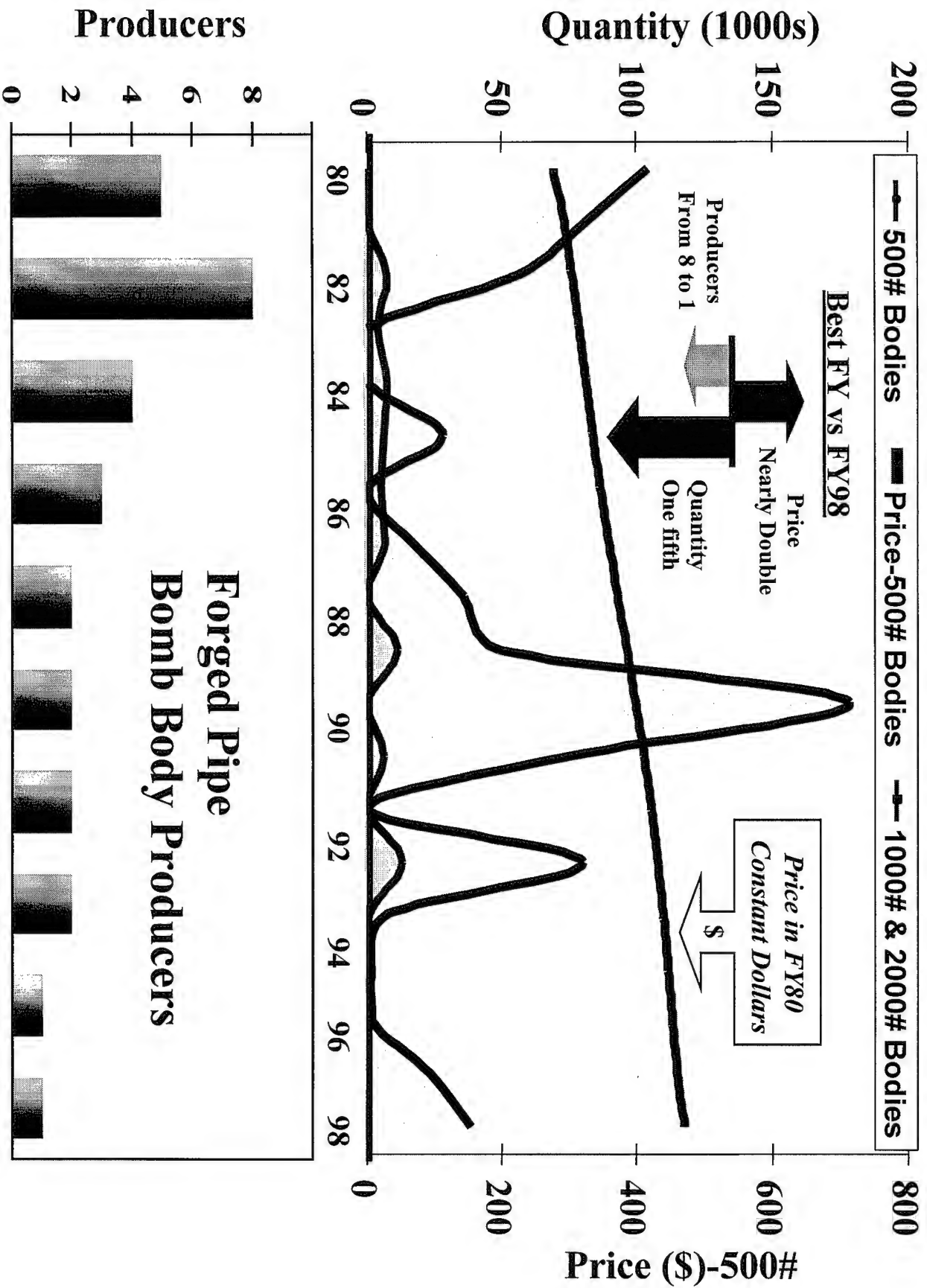
Introducing Cast Ductile Iron Bombs

A Joint Perspective
15 September 1998

Bomb Community



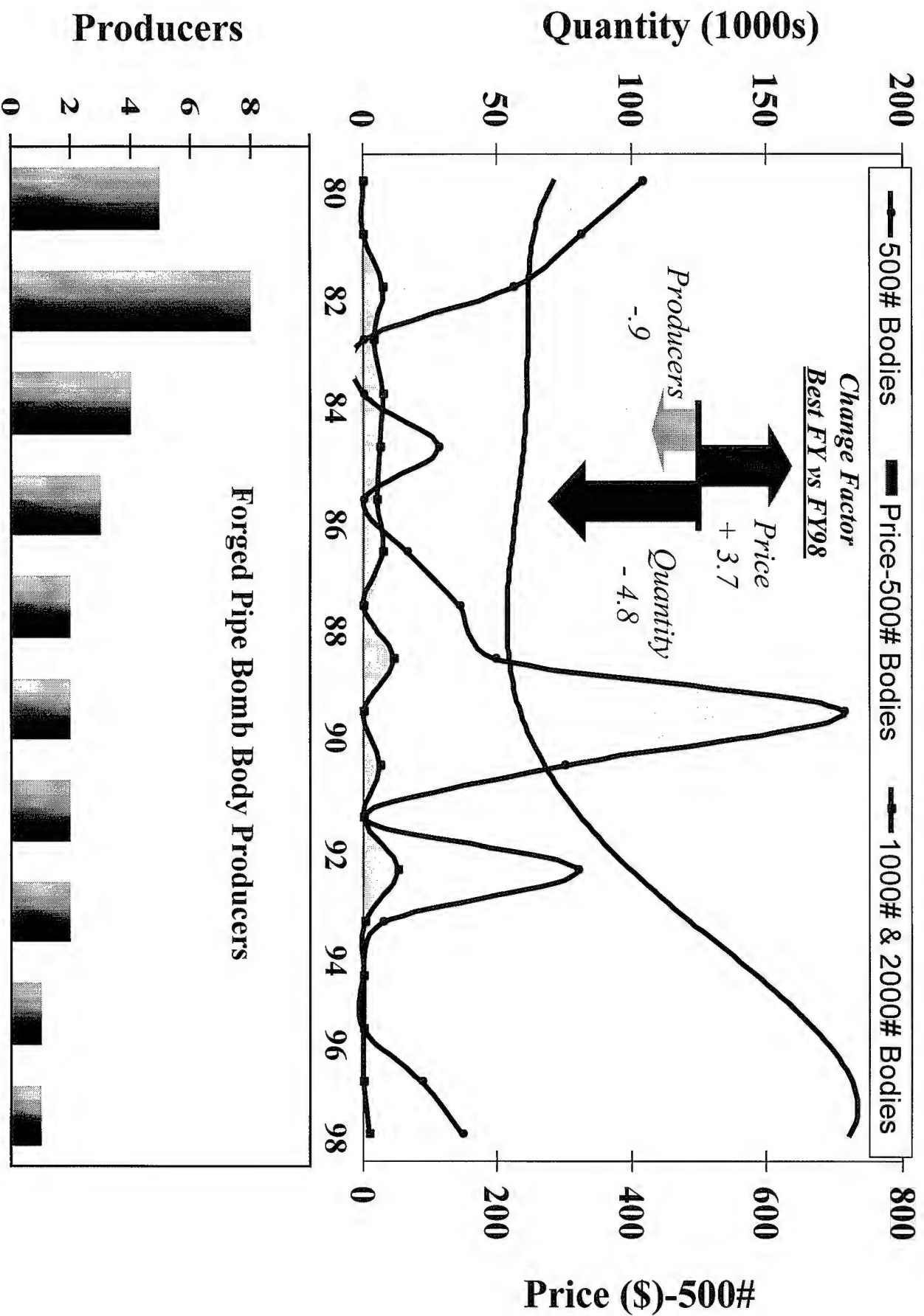
Procurement, Price and Producer Trends







SMCA Bomb Procurement, Price and Producer Trends



INDUSTRIAL

BASE

(PREPAREMENT)

MUNITIONS REQUIRED

Over 3-Year Period Following Conflict

	<u>NO. ITEMS</u> <u>PER FAMILY</u>	<u>QTY REQD</u> <u>IN 3 YRS</u>	<u>CANNOT</u> <u>SATISFY</u>	<u>POM</u> <u>BUYS</u>
ARTY	14	2,400,000	1	1
BOMBS	8	300,000	2	3
CANNON CAL	16	31,800,000		7
DEMO/MINES/GREN	32	5,100,000	4	16
DISP MUNITIONS	2	5,500,000		2
FASCAM	7	600,000		
FUZE	8	3,200,000		2
MORTAR	13	1,700,000		4
NAVY GUN	12	200,000		1
PROP CHG	4	2,200,000		1
PYRO	11	10,700,000		8
RKTS / WHD	20	1,200,000	1	3
SMALL CAL	19	1,400,000,000		12
TANK	3	130,000	1	1
	<u>169</u>		<u>9</u>	<u>61</u>

CURRENT BASE POSITION ON REPLENISHMENT

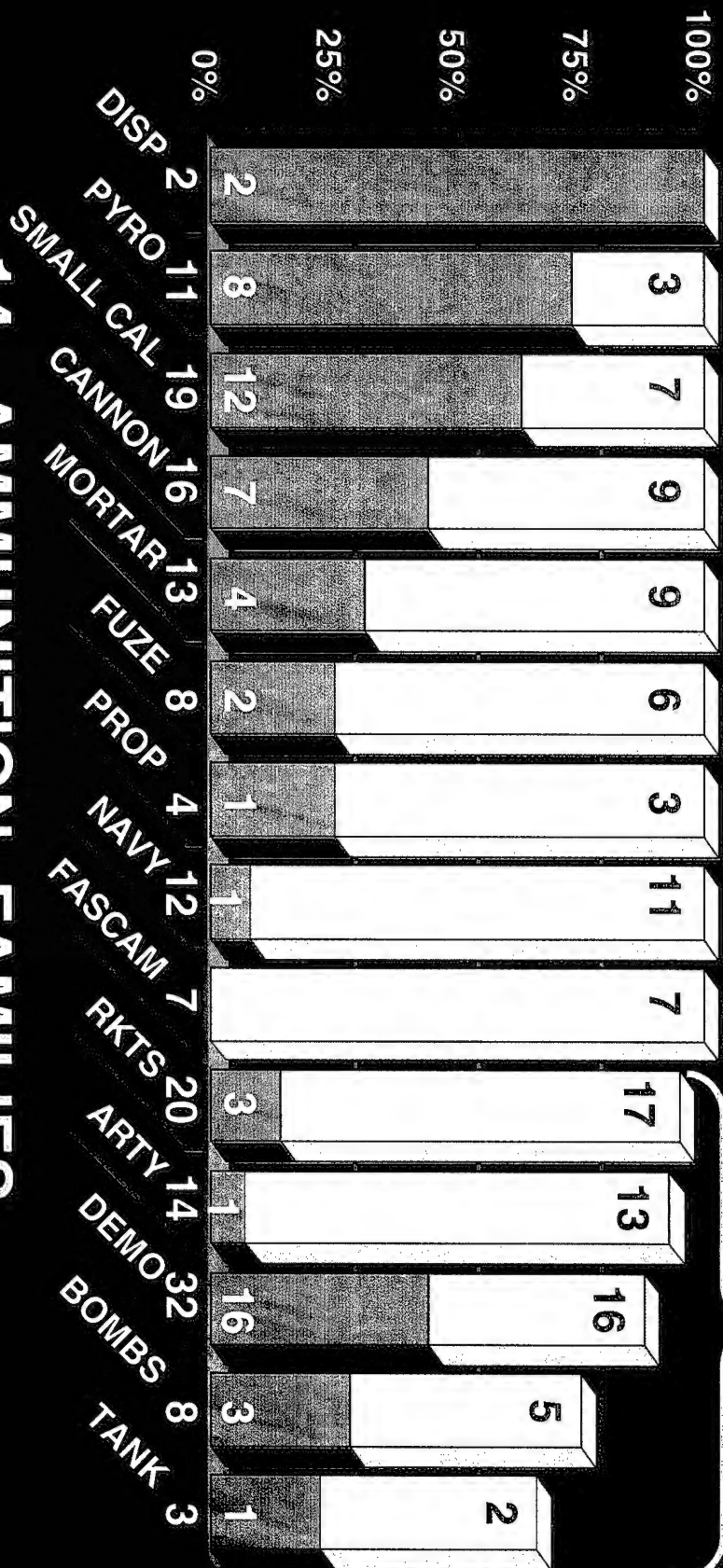
Percent Replenished Within 3 Years

NO BUYS

POM Buys

(Average for Entire Family)

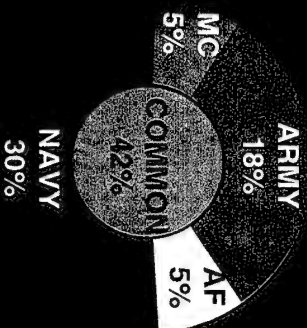
Cannot Meet DPG



14 AMMUNITION FAMILIES

AMMUNITION ITEMS

SMCA Replenishment



169 ITEMS → 9 with a
SHORTFALL
[ALL SMCA REPLENISHMENT PLANNED ITEMS]

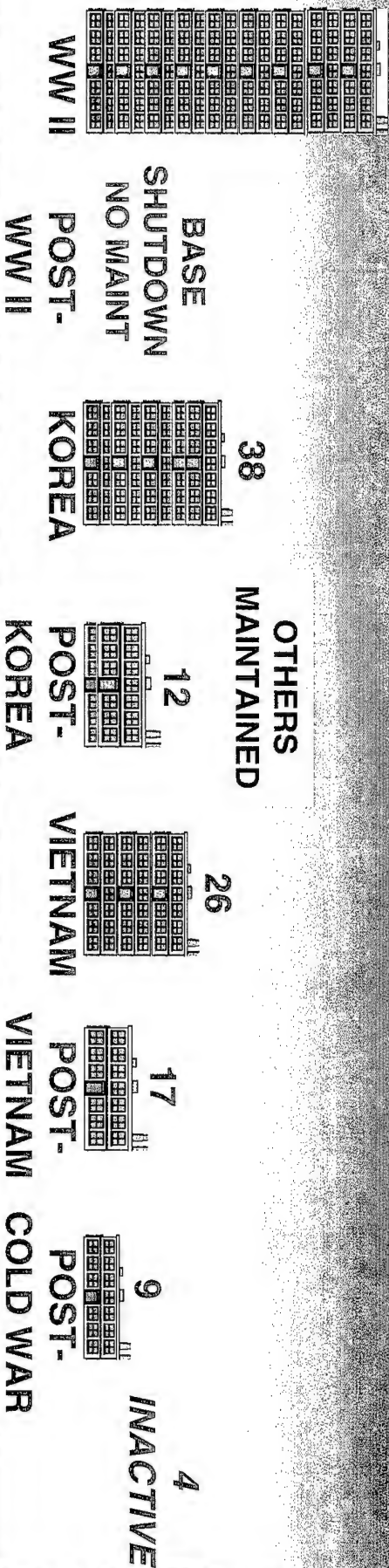
ARMY ITEMS 94 ITEMS → 6 with a
SHORTFALL
[30 Army Unique + 64 Common to other services]

WAR RESERVE (POM) → 29 with a
SHORTFALL

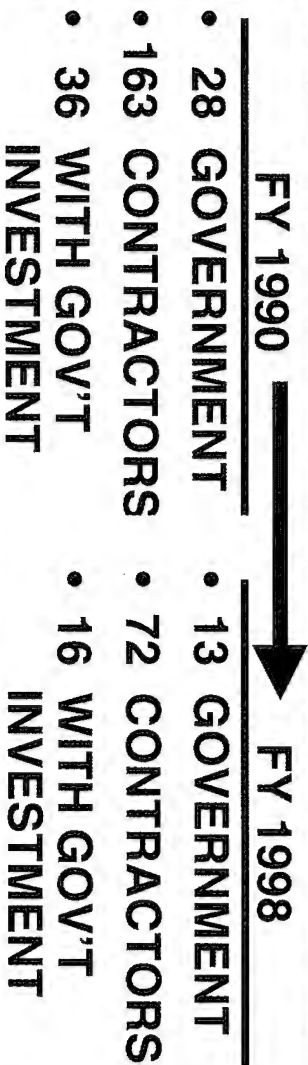
OPLAN (Go to war today) → 46 with a
SHORTFALL

MUNITIONS BASE SIZING

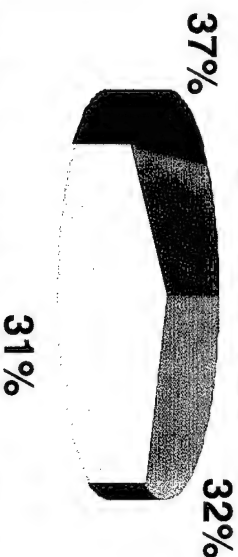
BASE EVOLUTION



APPROX 68% CAPACITY REDUCTION



CAPACITY



BASELINE AUG 91

FUTURE OF THE GOVERNMENT-OWNED AMMO BASE?

16 PEPs: Reduce thru Excess - to - Ownership

MSAAP: Explore Relocating Grenade Line

SCAAP: Pursue Excess - to - Ownership

RBAAP: Pursue Competitive Excess - to - Ownership

LAP: Pursue Reducing

One Facility

Continue Reducing Footprint



HOW LONG WILL WE NEED THE CONVENTIONAL BASE?

UNTIL TECHNOLOGY LEAPS AHEAD TO ...

TRI-NITRO COALAN

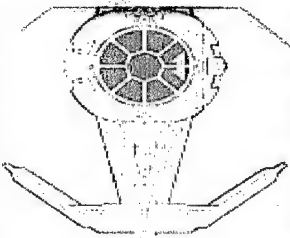
NEUTRINO

ENERGY BEAM

BULLET

AND TRANSITION TO A NEW CONCEPT...

TO SOLDIER



AMMUNITION ORGANIC PRODUCTION BASE

ACTIVE

LAP > IOWA, MILAN
& LONE STAR

PROPELLANT > RADFORD

EXPLOSIVE > HOLSTON

SMOKE > PINE BLUFF

SMALL ARMS > LAKE CITY

BOMB > MCALESTER

NAVY GUN > CRANE
& PYRO

INACTIVE

ARTILLERY > LOUISIANA
SHELL

GRENADES > MISSISSIPPI

CTG CASES > RIVERBANK
GRENADES

ARMY

RESERVE PLANT

ARTILLERY > SCRANTON
SHELL

ACTIONS

XMAT approach for Holston AAP

Disposal contract for Longhorn AAP

Test with COE: Cornhusker AAP

Teaming with GSA, COE, AMC, DA: Indiana AAP

Linking replenishment and peacetime in acquisition

Combining / grouping items

Multiple-year contracts

Facility contracting

Delta contracting

Excess to ownership

POTENTIAL PITFALLS

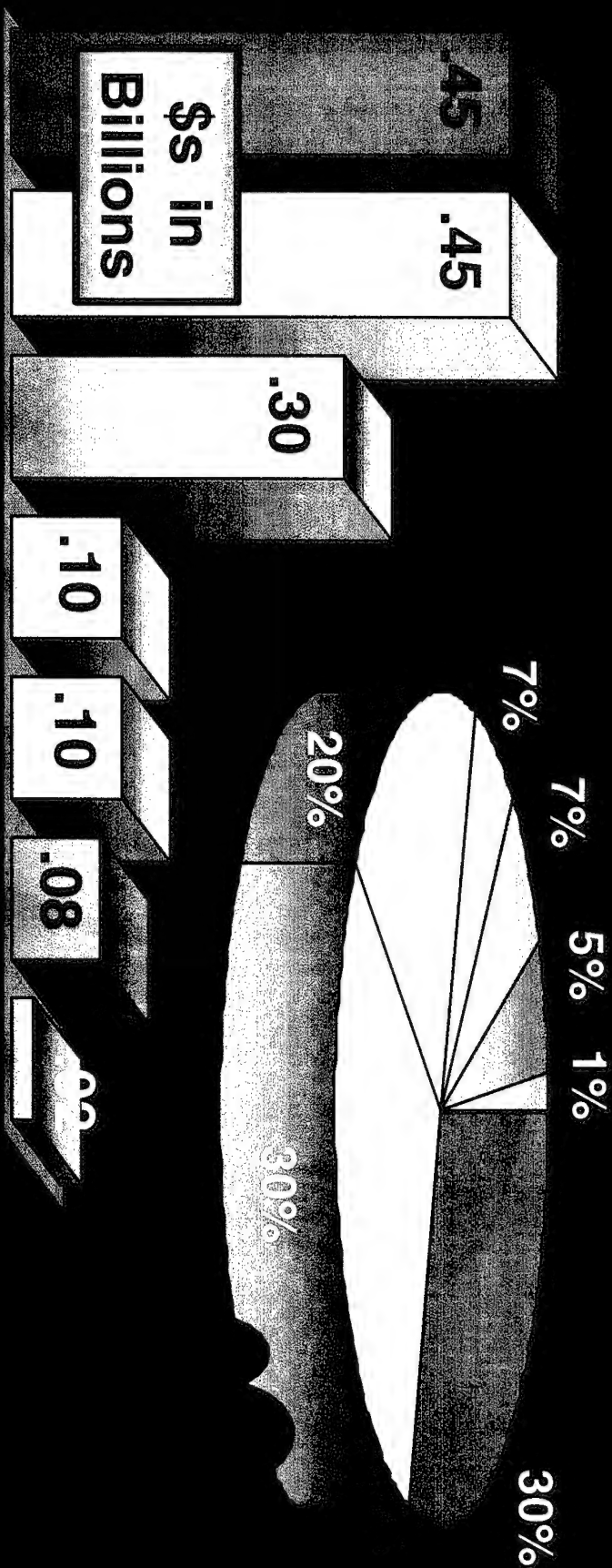
Sub Optimization of Existing Base

Base Sized for Only Peacetime

Site Manager - No Production Skills

Repetitive Investment Costs & Learning Curve

HOW WE SHOULD OPERATE AMMUNITION BUDGET



* STOCK / STORE
RECEIPT / ISSUE

MOST LIKELY SCENARIO

"It's tough to make predictions, especially about the future."

Less money for base with increasing F&O competition.

Questioned to death.

More studies.

Bill payer material.

Companies hanging on until all profit is gone.

Encourage private / contractor investment...

...saves 20% so we can compete.

More mergers.

International buys.

"It's deja vu all over again!"



Acquisition Strategies



Milton I. McKinney
HQ, IOO
15 September 1998

Industry
asked for

And another thing -- I want

- Long term commitments
- Input to solving problem
- Combined products
- Flexible requirements
- Sharing the good & bad
- Partnership
- Fair play

Yes dear

IOC
Acquisition
Household

In the past
Government
listened, but
did nothing

YEAR 2000

PRESENT

Managing

Acquisition

During

Period of

Great Change

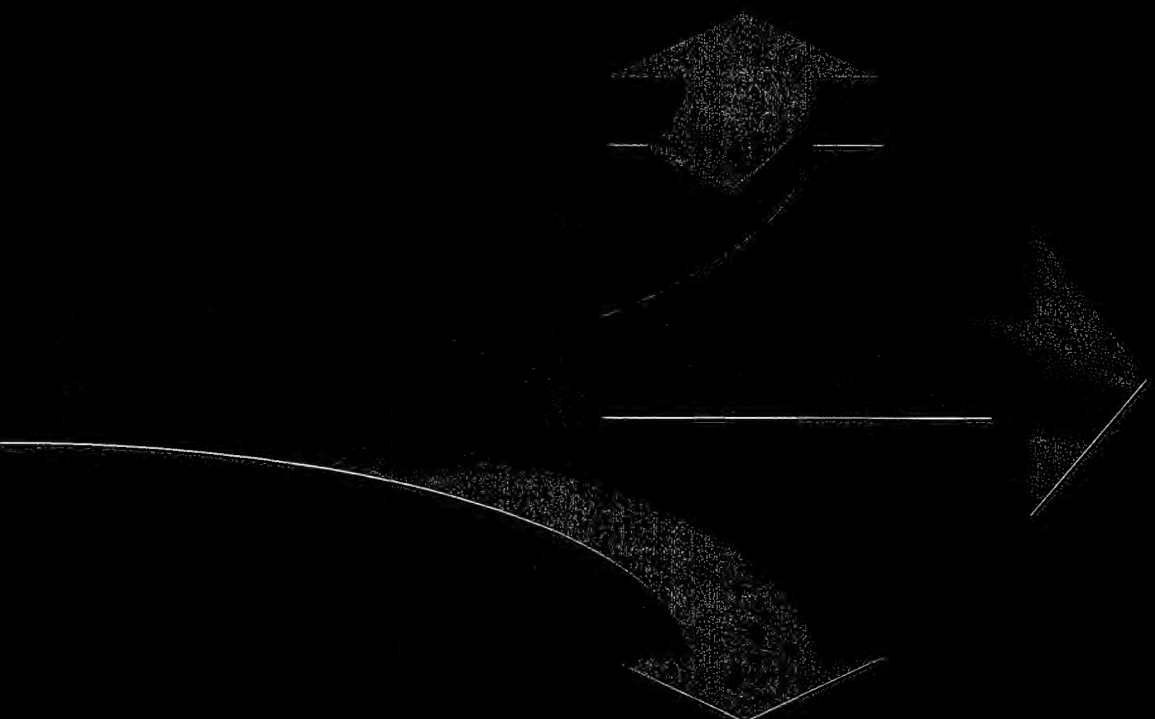
FUTURE

Managing

Ammunition

into Next

Decade



Acquisition Strategies

- Tank Ammunition
- Explosives
- Small Caliber Ammunition
- Load, Assembly, Pack
- Medium Caliber
- 20mm
- 40mm
- Demil
- GOCO

120mm Tank Ammunition

Multi-year I Program Structure

- Program management (Training Rounds)
 - IOC cross functional co-located team
- Contract structures
 - 4 year multi-year with restricted sources
 - System Contractors: PRiMEX Technologies and Alliant Techsystems
 - Sub-tier Production Base: IAAAP (Mason & Hanger), RAAAP (Alliant Techsystems), Armtec Defense Products
- Results
 - 21% savings (\$136 million)

120mm Tank Ammunition

MYII Acquisition Strategy

- Best value source selection criteria
- Key factor → risk mitigation
- Source selection objectives
 - Timely delivery
 - Quality product
 - Affordable price
 - Partnering mindset

120mm Tank Ammunition MYII Acquisition Strategy (Cont'd)

- 5 year multi-year restricted competition
 - Incumbent system contractors
 - No sub-tier restrictions
- J&A approved under “Exception 1” on
19 Feb 98

Explosives

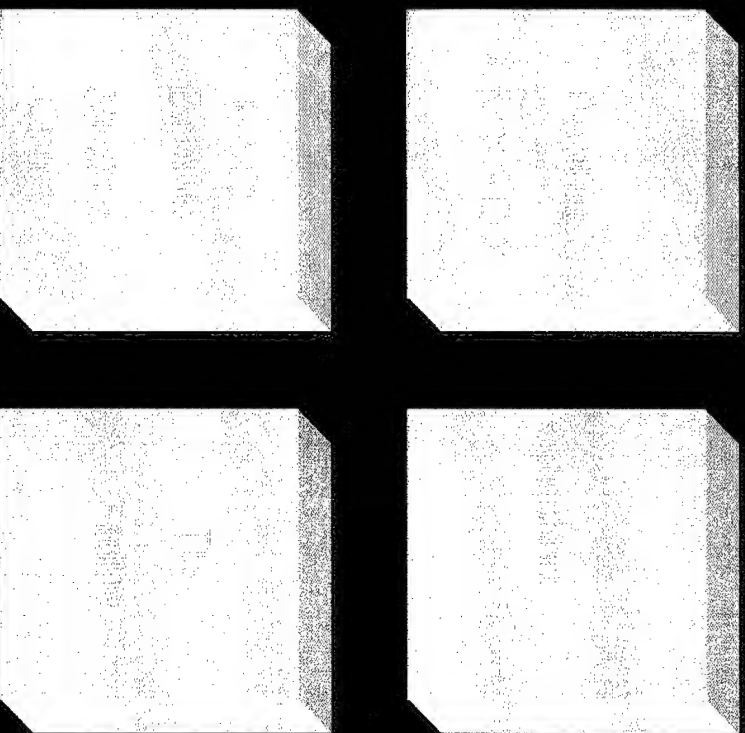
Compete the Problem

- HMX/RDX at the best cost and quality and on time
- Provide R&D for products of the 20th and 21st century
- Have replenishment capacity
- Develop/execute a future strategy for the Holston facility

Involve industry in
developing the solution

Explosives

The Solution



- Manufacture of RDX/HMX at Bridgewater, UK until Holston is reconfigured
- R&D = pilot through production (ARDEC, Indianhead, DERA, and Thiokol)
- Use Holston with efficiencies for replenishment
- Facility use, to be marketed
- Savings - \$184 million

Royal Ordnance of North America is the successful offeror

Small Caliber Ammunition Acquisition Strategy

- Presolicitation Conference 9 Jul 98
- Industry to provide solutions
 - Manufacturer small caliber ammunition at the best cost and quality, on time including NATO approved U.S. design
 - Provide for R&D
 - Capacity for replenishment
 - Facility use at Lake City AAP and NATO Test Facility that makes sense

Small Caliber Ammunition Acquisition Strategy

- Full and Open competition
- Best value (price, past performance, and technical
- Long term
- Firm fixed price
- Range prices
- Two separate contracts: Ammunition items and facility use

Load, Assemble, & Pack Ammunition

“Best Value”

Army Commits

- Indemnification
- 5 yr facilities-use contract (same as Iowa AAP)
- Maintain or compete workload items. Intend to workload for at least 2 years
- Follow through on planned investments
- Total customer partnering

Savings 25.5% (\$153 million)

American Ordnance Commits

- Guaranteed 20% LAP price reduction on IOC projected workload items; reduction % ramps up from 1999, 2000, & 2001 to 20% by 2002 & in 2003
- Fixed viability
- Sensible investment (up to \$10M)
- Radical & continuous improvement
- Facilities use management
- Total customer partnering

25mm-30mm Ammo Acquisition Strategy

FY 99-03

- Restrict to the United States and Canada
- Retain two sources via split awards
- Consolidate 25mm/30mm Cartridges when prudent
- Award multi or multiple year contract(s) in FY 99 for FY 99 - FY 03
- Exclude M919 25mm APFSDS-T Cartridge due to non-transition

20mm Ammo Acquisition Strategy

FY 99-03

- Restrict to the United States and Canada
- Compete annually
- Award single “winner take all” contract annually
- Reexamine strategy if 20mm ammo requirements increase in later years

40mm Acquisition Strategy

M918 Projectile Assembly

- Competitive 8(a) procurement
- Largest 8(a) concern set-aside in IOC
- Firm fixed price contract
- 100% unevaluated option
- Potential future multi-year systems buy
- LAP at American Ordnance

Ammo Demil Acquisition

- Enhanced small business participation
- 5 year ID/IQ long term contract
- Munitions - greater diversity
- Two awards to maintain out year competition
- Government/industry shared risk
- Less reliance on firm fixed price contracts
- Contractors will have on-line access to TDPs
- Teaming with organic operators

Proposed Active GOCCO Strategies

Holston	Awarded
Lake City	Award 2000 – 5 yr. award + 5 priced 1 yr. options
Hawthorne	Award 2000 – 1 yr. award + 6 priced 1 yr. options
Lone Star	Compete within 5 yrs.
Milan & Iowa	Non compete award thru 2003
Radford	Compete 2003

IOC Acquisition Household

Finished projects

- IPT
- Partnering
- Army Credit Card Program
- Restructuring Organizations & Processes
- Information Technology and Electronic Commerce
- Use Common Processes
- Performance Based Contracts
- Removing Barriers to Business Judgment
- Market Research
- Innovative Contracting
- System Contracting



IOC APBI

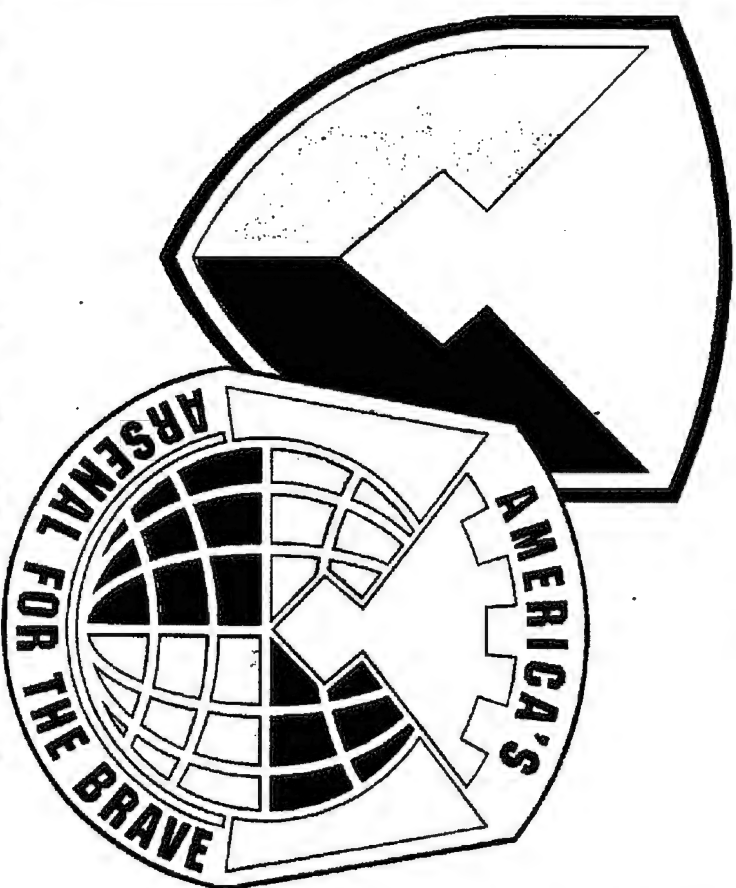
2 - 3 March 1999

Holiday Inn, Moline, IL

Presented by:
Brigadier General John Deyernond
DCS Ammunition

Army Materiel Command

Ammunition Update
to
MUNITIONS SUMMIT
15 September 1998



AMC - Relevant, Responsive & Ready!



Current Ammo Issues

Reduce Ammo Costs

Demil Optimizer

Mortar Backlog

AAA Study on Reforming Ammo Procurement 97 Completion

Less Than Lethal

Army Science Board Look at Demil

QDR

ProdBa Assmnt

Ammo Prod Footprint Reduction

Precision Munitions/ Logistics

Decker Memo PMS as Life Cycle Managers

DODIG Recommends Consolidation of Ammo Plant Contract Mgt under DLACAS

Munitions Review

Ammo 'Rock Drill'

Fuze Base

Land Mines

HQ AMC Reshape

Green Ammo

Ammunition is a busy business !!!



PAA - Funding Profile

PAA Historical Trend (\$M)



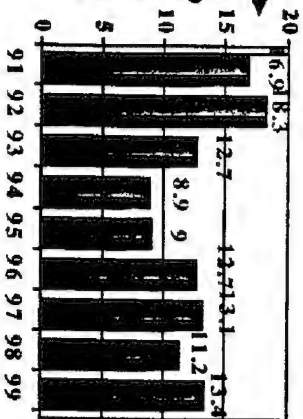
Today's Production Reflects Yesterday's Funding -

Procurement as a Percentage of Army Budget - FY98/FY99

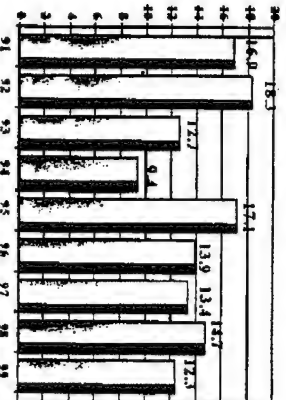
Army Budget (\$ in Millions)	FY98	FY99
APPROPRIATION	1,292	1,256
FAMILY HOUSING	25,754	26,211
MIL PERSONNEL	4,511	4,487
RDTE	597	707
MCA	20,656	20,468
OMA	6,752	8,373
ERA	377	386
BRAC	400	524
TOTAL*	60,442	62,512

*Totals may not add due to rounding

Percentages



Fiscal Years



Ammunition as a Percentage of The Procurement Budget - FY98/FY99

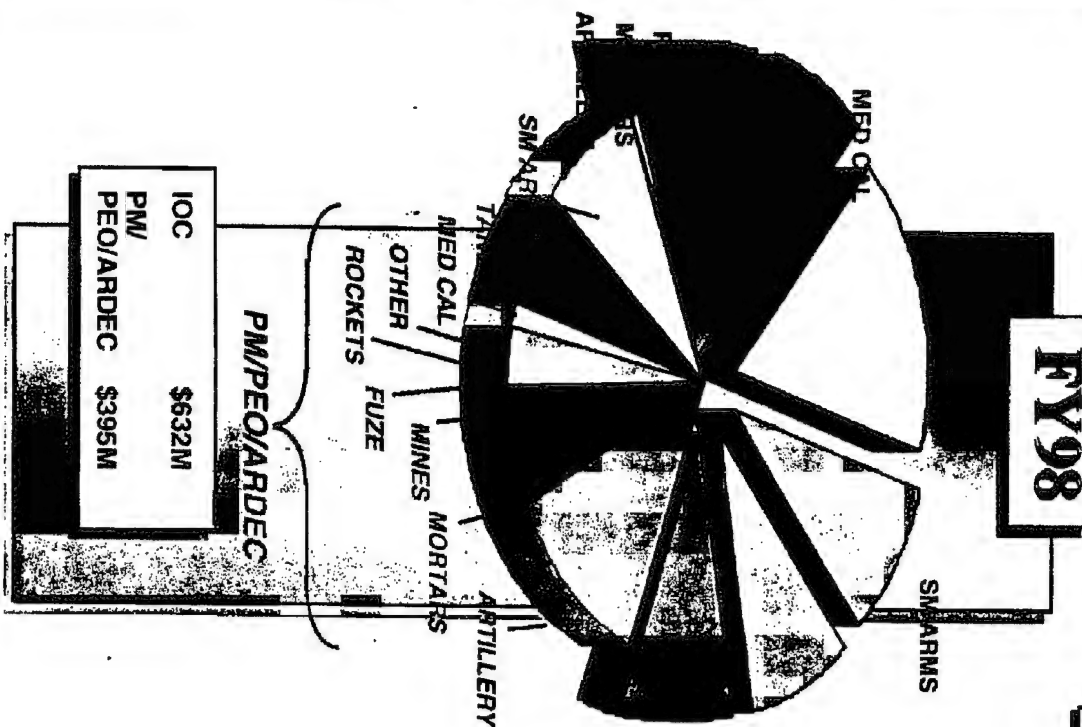
Procurement Appropriation (\$ in Millions)	FY98	FY99
APPROPRIATION	1323	1326
AIRCRAFT	744	1206
MISSILES	1291	1434
WTCV	1020	1009
AMMUNITION	2563	3
OTHER PROCUREMENT	6940	81
TOTAL		



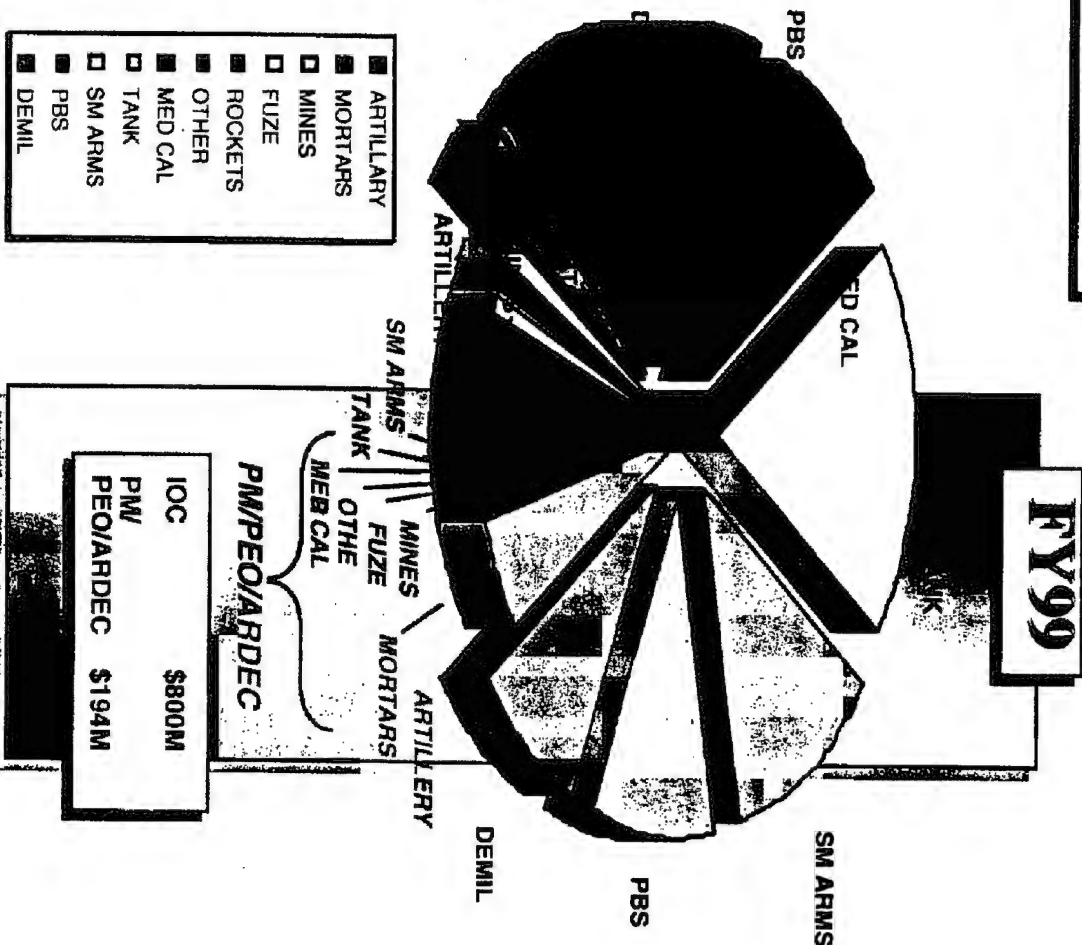
Army Ammo Funded Requirements

PAA

FY98



FY99

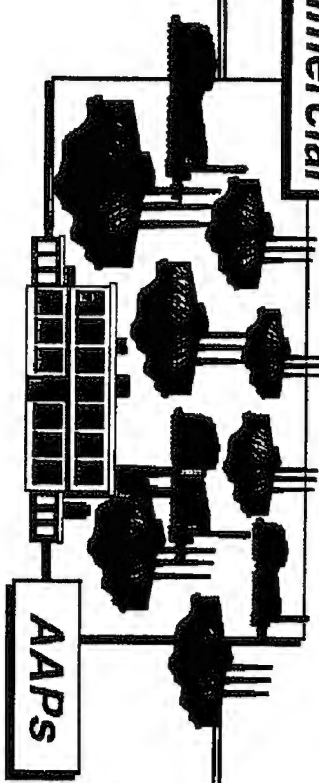




Ammunition Production Base

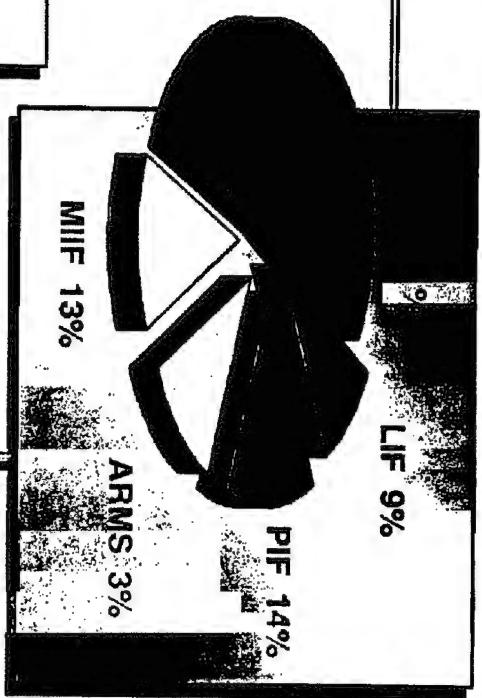
FY98-99 Budget

Commercial



Activity 2 PAA Funding

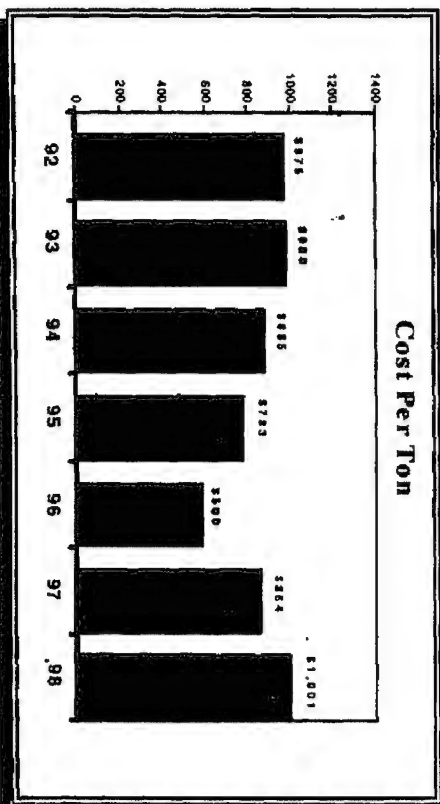
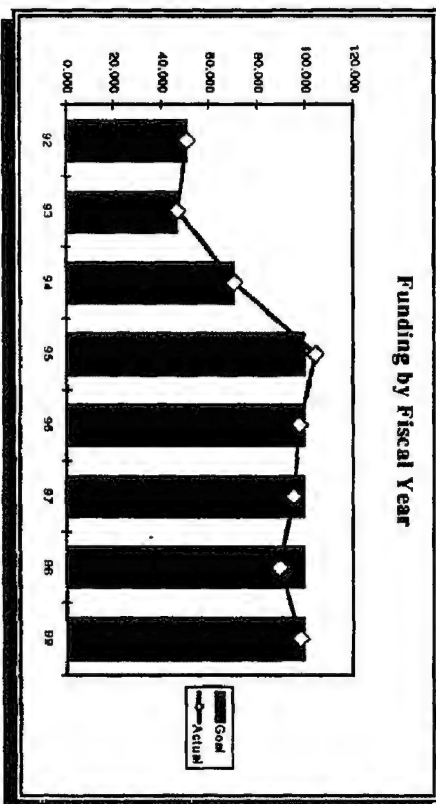
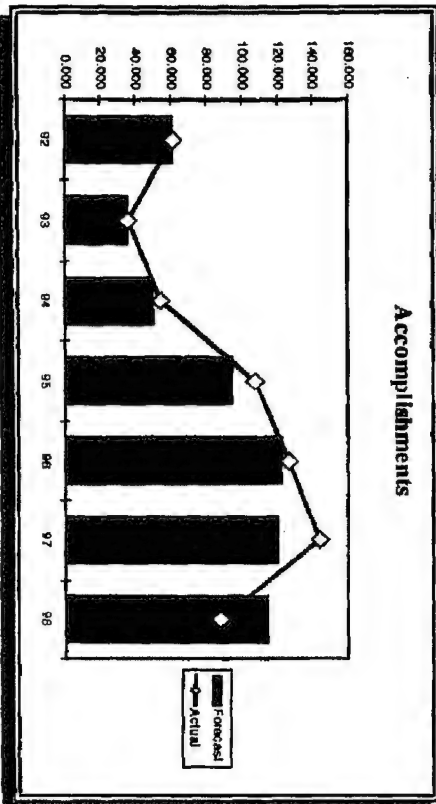
	\$ Million	
	FY98	FY99
Industrial Facilities (IF)	24.3	24.7
Waywayof Industrial Facilities (LIF)	16.4	15.3
Maintenance of Inactive Facilities (MIF)	22.5	15.8
Conventional Ammo Demil	91.0	98.0
Arms Initiative	24.4	4.9
Totals (\$ in Mil)	181.6	181.7



Challenge
Production Base
vs.
Hardware



Ammunition Demilitarization Accomplished/Forecast



- Goals--**
- ♦ Continue to avoid demilitarization through direct sales, FMS, cross-leveling between services and use in training whenever possible
 - ♦ Execute a balanced program between destructive and non-destructive technologies
 - ♦ Maintain a balance between government installations and the growing private industry capability
 - ♦ Continue with our successes

Note 1: Cost spike during FY97 was due to greater than normal use of incineration @ approximately \$2,000 per ton.
Note 2: Includes reimbursable projects.

(data as of 8/17/98)



CAWCF Closure

Direction/Plan

* DOD Comptroller Directs CAWCF Close-out Beginning FY 99 [PBD 432, Nov 1996]

- Separate Financial System for Ammunition Considered an Unnecessary Expense
- Directed APTT Be Formed by OSD(A&T) To Determine Follow-on Procedures and Oversee CAWCF Closure

* Army Develops Closure Plan

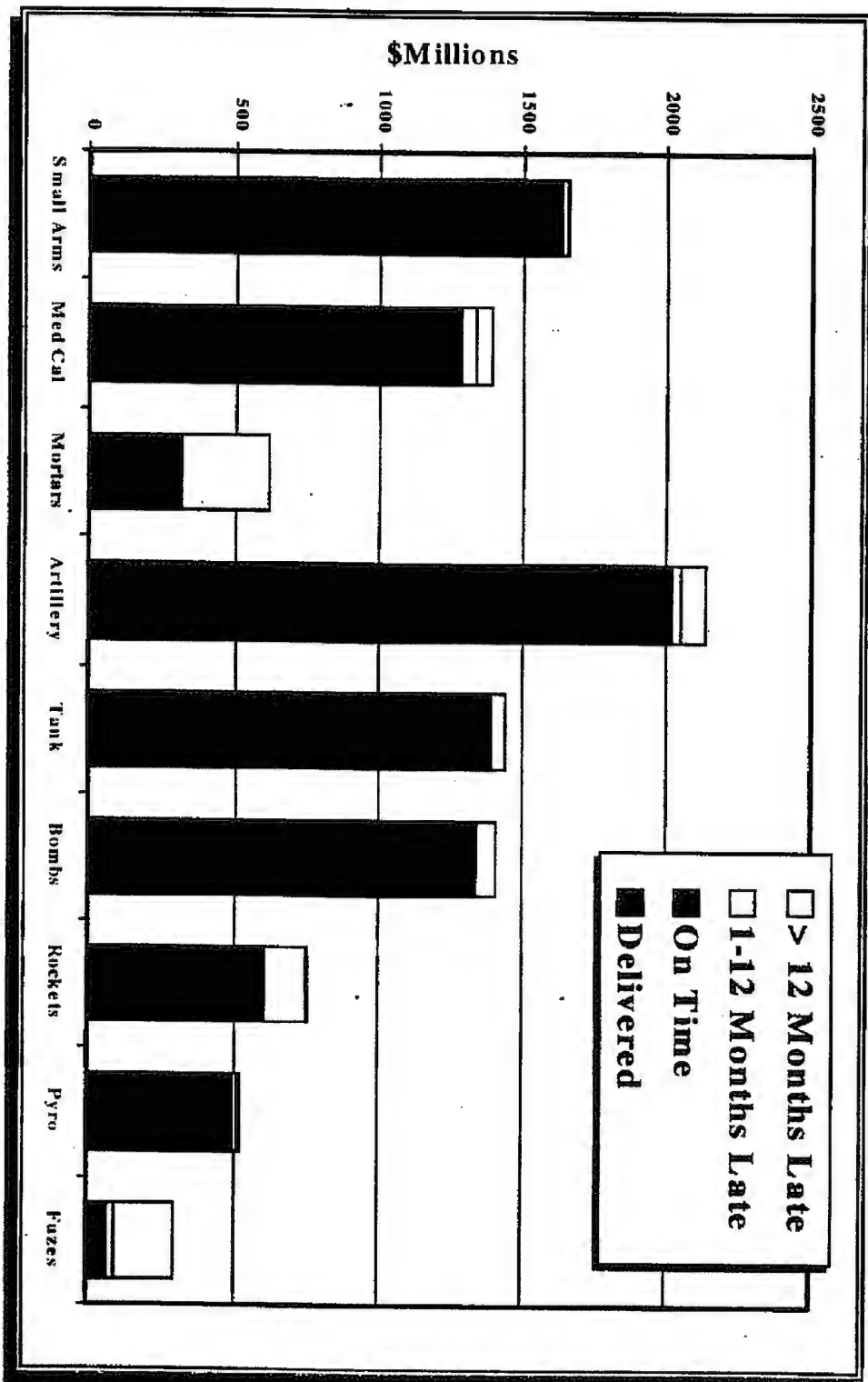
- All Orders Delivered and Fund Closed by FY05
- Army Audit Agency to Validate Closure Cost
- Plan Approved by All Services & OSD in May 97

- ✓ Fund Obligation Closely Scrutinized
- ✓ Accurate Pricing
- ✓ Reduce Lead Times
- ✓ Fixed Price Contracts with Options
- ✓ Increased Systems/Bundle Buys



Work in Progress FY90-97 CAWCF Orders

as of 30 SEP 97





Ammunition Procurement Projection by Categories

FY98-03

\$Thousands



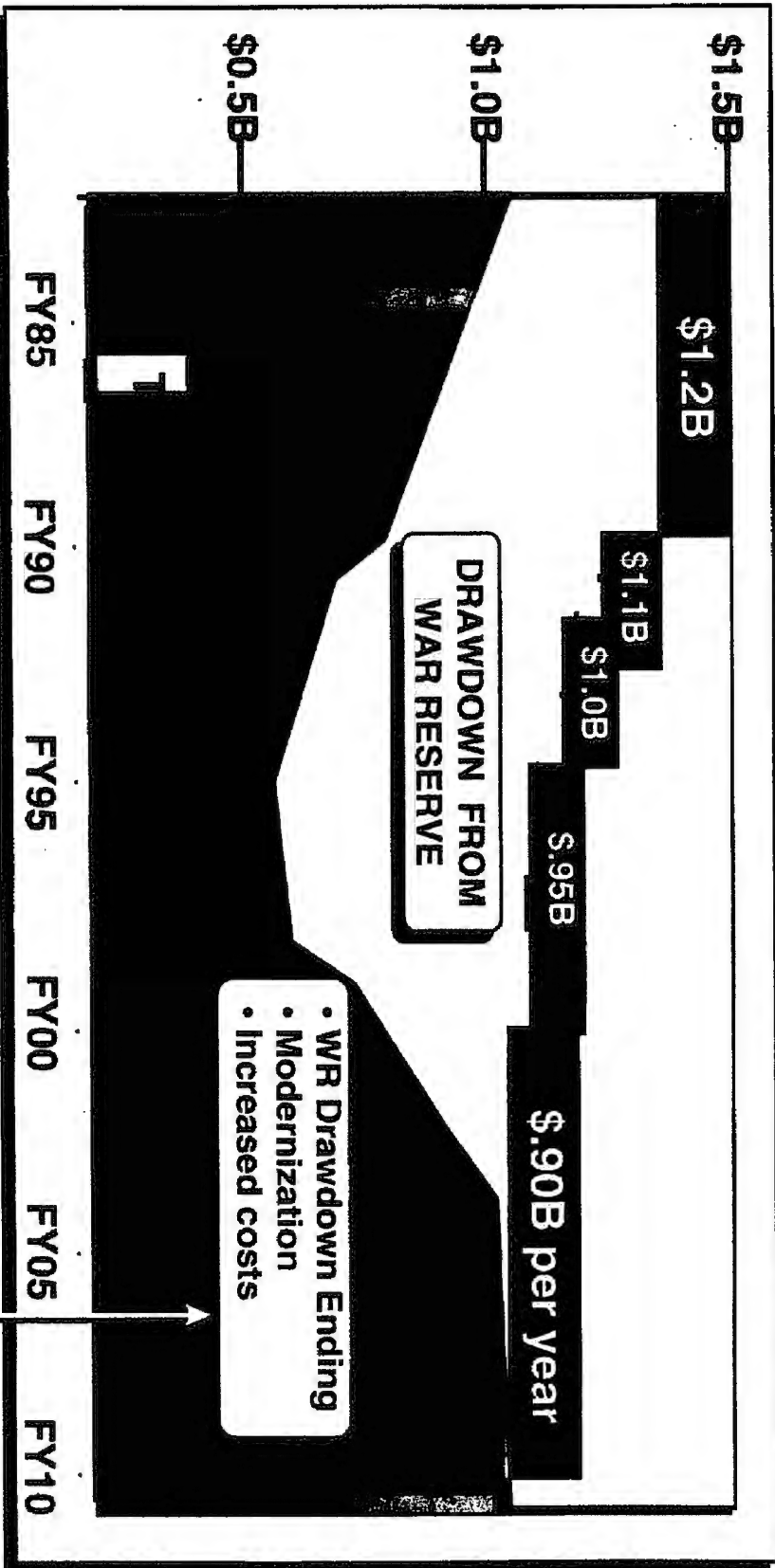
FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03

- ☐ Prod Base
- ☐ Other Misc
- ☒ Rockets
- ☒ Mines
- ☐ Arty Fuzes
- ☒ Arty Ammo
- ☐ Tank
- ☒ Mortars
- ☒ Small Arms



Training Ammunition

Resource Trend



$$\begin{matrix} \text{Training Ammunition} \\ \text{Procurement \$} \end{matrix} + \begin{matrix} \text{WR} \\ \text{Drawdown} \end{matrix} = \begin{matrix} \text{Training} \\ \text{Resourcing} \end{matrix}$$

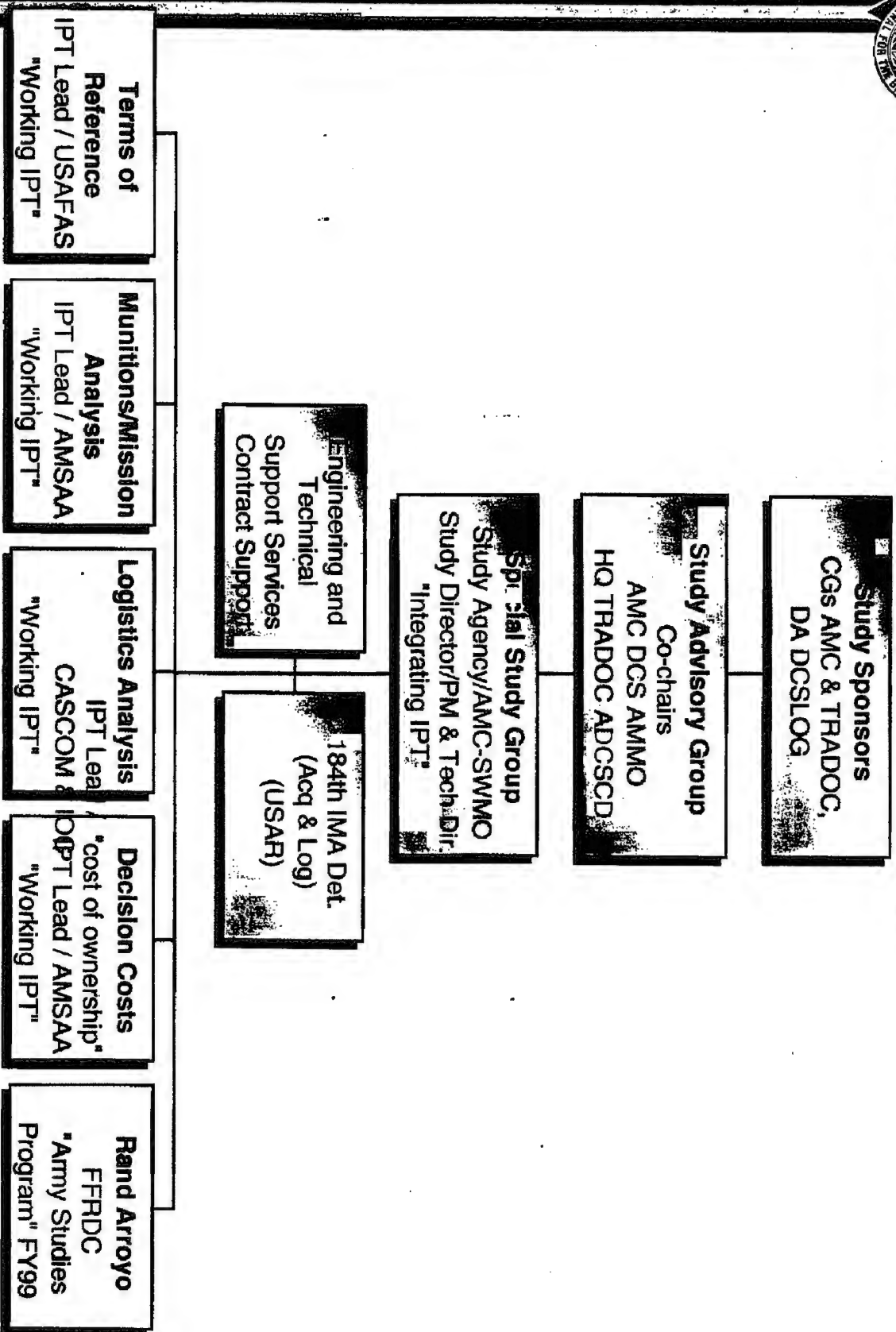


Precision Munitions/Logistics Study Broad Study Questions

- ★ Given the warfighting strategies of Force XXI and Army After Next, what are all logistics impacts that result in the use of precision munitions [heavy mix] versus the use of non-precision munitions [only]?
- ★ Given these logistics impacts, what are the resulting possible implications on Army force modernization strategy and Army force composition? What are those costs?
- ★ What are the true burdens (deltas in logistics) of precision munitions versus non-precision munitions across all combat, combat support, CSS force structure, and O&S? What are those costs?
- ★ For the decided upon scenario, time frame, and weapon mixes, determine the level of investment and cost comparisons to acquire and sustain a realistic a mix of precision munitions and non-precision munitions?



PMIS Organization



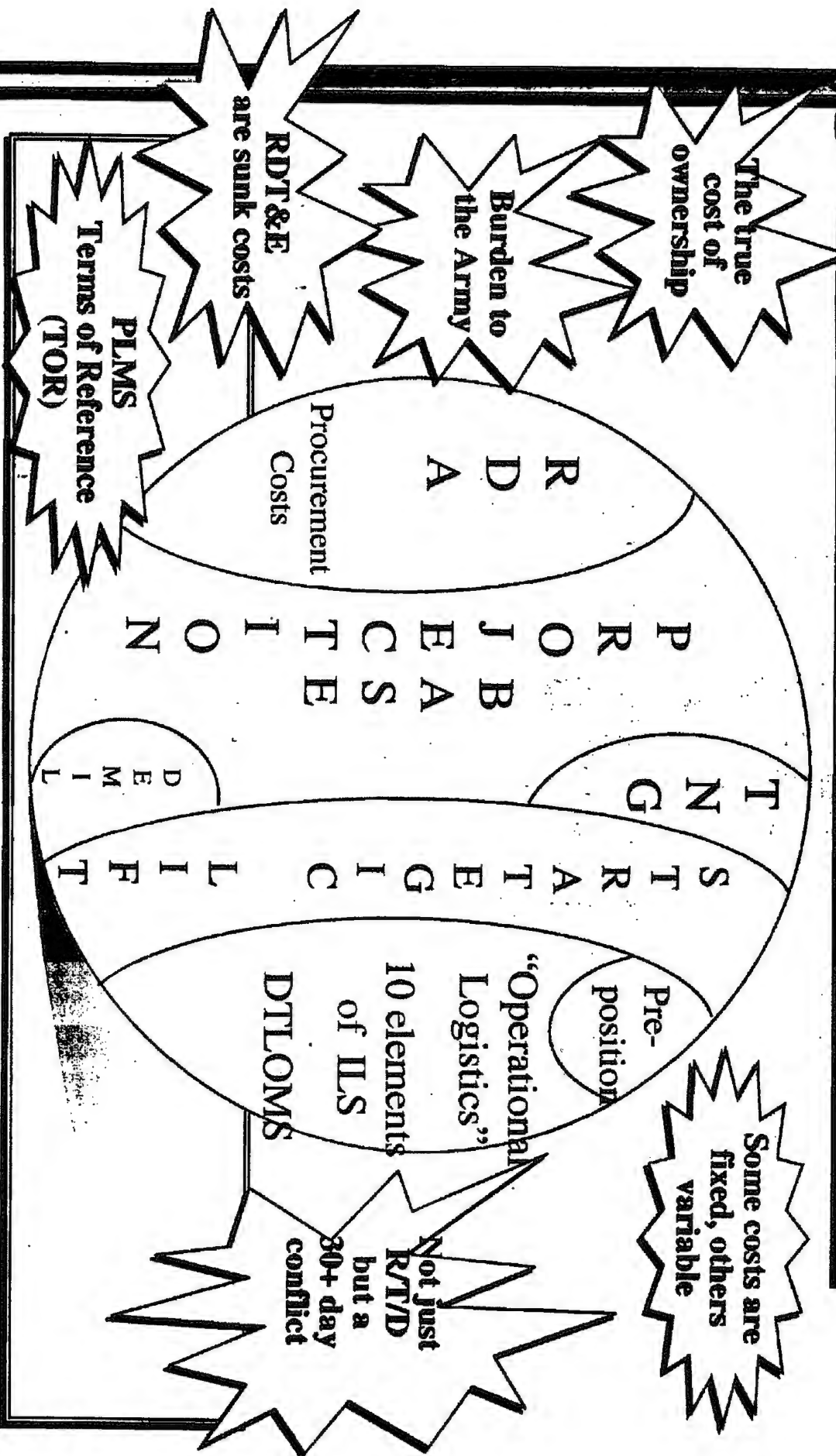


PMLS Conventional and Precision Munition Candidates (12)

Target Description	Current / Conventional Munition	Next Generation Precision Munition	PMLS Comments/Benefits
Bunkers, soft targets	Bunker Defeat Munition	PGMM, 120mm	PGMM, 120mm extends urban combat capability, extends range and precision
Anti-armor	Family of 120mm tank main gun ammo	Tank extender, range extended by engaging TIRM	extends survivability by engaging targets in defile
All targets	155mm, DPICM base bleed, M864	ER XM982 DPICM	ER XM982 DPICM improves range for counter battery
Bunkers	155mm, HE widearea fuze	ER XM983 HE delayed	ER XM983 HE delayed / Bunker engagement
Counter Battery	155mm, DPICM	XM898 P1 SAM	XM898 P1 SAM efficient counter battery killer
All targets	155mm, DPICM	155mm, Low Cost Counters accurate registration Munition (LCCM) Future B2B target engagement on M864 / M864 reduces munition requirements	
All targets but heavy armor	MLRS DPICM, XM85	MLRS DPICM Extended range and significantly with GPS guidance Improves accuracy	
Anti-armor	No current in-direct rocket launched capability	MLRS MSMTAR kills ACV targets deeper	Diminishes intensity of close fight Improves force survivability
All targets but heavy armor	ATACMS APAM	ATACMS IA ORS	ATACMS IA ORS accuracy independent of range
Anti-armor and High Value targets	No current in-direct missile launched deep capability	ATACMS II / BAK	ATACMS II / BAK High Value targets deep, improves force survivability
Soft point targets and bunkers	Hydra 70, and sometimes Hellfire II (LSA)	Advanced Precision Kill Effect (APKE) rocket requirements System (APKWS) (B2B) reduces collateral damage	
Heavy armor targets and	Hellfire II (LSA)	Apache Longbow	Apache Longbow provides platform survivability Provides all weather capability



Weapon System & Ammunition Logistics Footprint



Elements of the Ammo Log Footprint Equation



Most Likely Area of Impact

CSS Tonnage

All munitions
(Class V)
comprise 70 %
of CSS tonnage.

Artillery
ammunition is
80% of that.

The opportunity exists for Artillery Precision
Munitions

to impact ~~56% of CSS tonnage.~~



Precision Munitions and Logistics Study (PMLS) Synopsis

- **Quantify deltas in cost of ownership/burden to the Army between current conventional non-precision munitions and future precision munitions, across the total logistics footprint and in battlefield performance**
- **Draw from previous and ongoing effectiveness, warfighting, and logistic analyses (WARREQ, IOC Rock Drills, Crusader Ammunition Supply Study, etc.)**
- **Identify and quantify value of Revolution in Military Logistics (RML) between conventional and precision munitions**
- **Develop data, findings, conclusions, and recommendations for decision makers for the POM 02-07 process in FY 99**

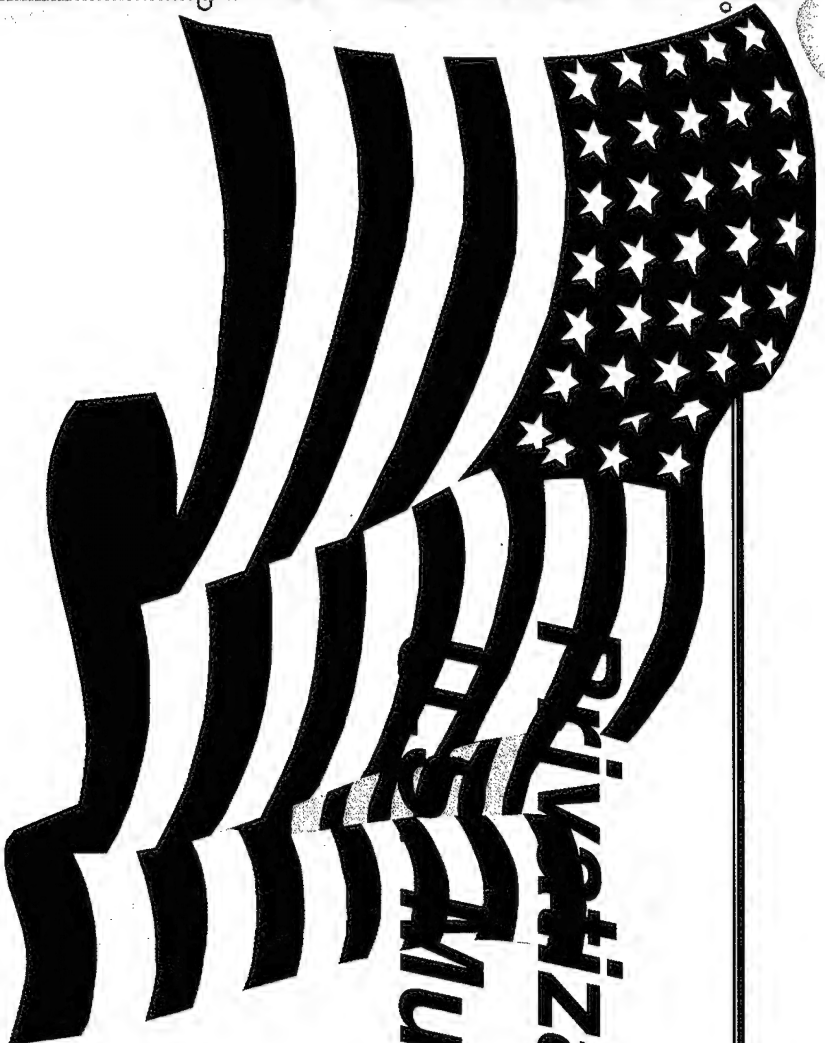


Summary

Imperatives:

- ✱ **Reduce Cost of Ammunition**
 - ✓ Production
 - ✓ Storage / Maintenance
 - ✓ Demilitarization
- ✱ **Maintain Readiness**
 - ✓ Replenishment Capacity
 - ✓ Ability to Produce Future Requirements

**PMLS
Study!**



Privatization and the Munitions Base

Ken Morgan

President

General Dynamics Ordnance Systems

16 September 1998

Overview

- **Definitions**
- **Differing Views of Privatization**
- **Comments on Study Recommendations**
- **An Alternate Approach**
- **Depot Privatization**



Definitions

- **PRIVATIZATION**

- The transfer of assets from government ownership to private ownership

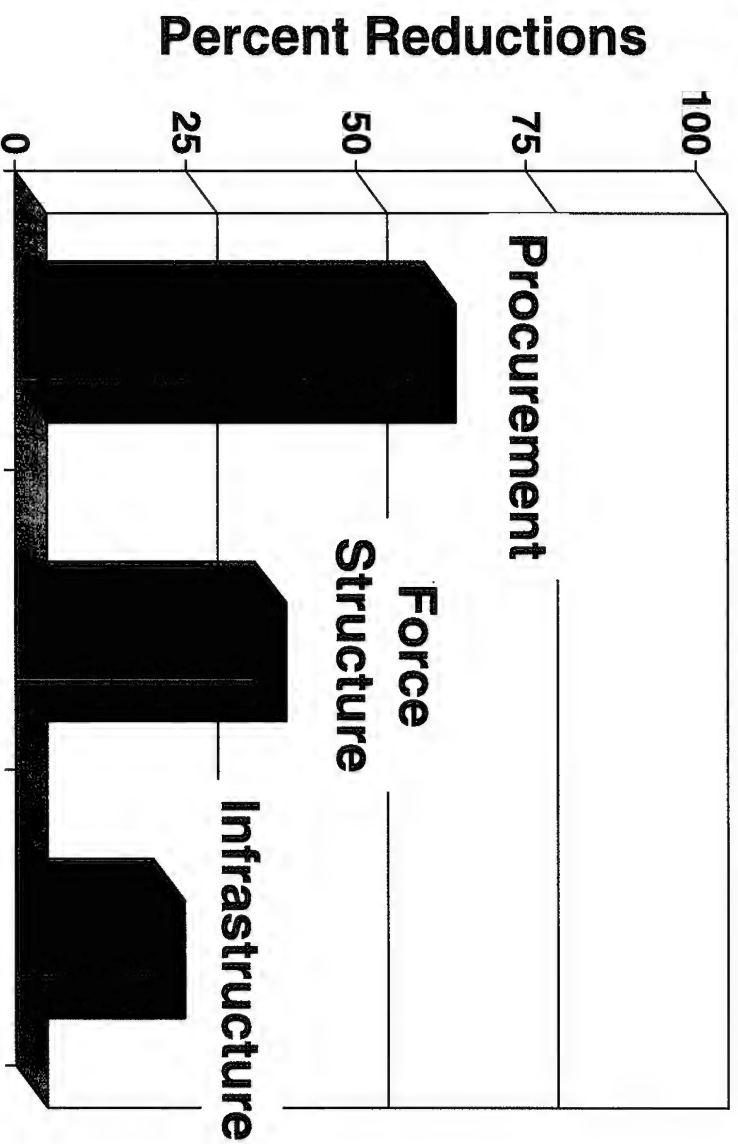
- **OUTSOURCING**

- Contracting out for services and support formerly accomplished with internal government resources

Terms Often Used Interchangeably

Why all the interest?

- FY97 - 01 DOD Infrastructure Costs: \$740 Billion
- Budget Reductions since 1989:



Infrastructure Not in Sync with Today's Realities

Privatization Theories

- **“Field Of Dreams” Theory:**
 - If you build it, they will come
- **Government Privatization Corollaries:**
 - If we own it, it must have commercial value
 - If we offer it, they will come
- **Industry Executive Reverse Corollary:**
 - If you don’t want it, neither should we

Much talk about business-case analysis, but little real appreciation of market forces

Study Recommendations re Privatization

- **Government owns selected real estate as ammo industrial parks -- “magnets” for ammo producers**
 - **Operated by private site manager**
 - » Invests to attract tenants
 - » Uses site assets to generate revenue
- **Industry finances, owns, & operates production assets; invests to modernize**



Industry Perspective

- **Must provide increasing shareholder value**
- **Driven by Return on Investment (NPV/IRR)**
- **Key factors:**
 - **Stability/predictability**
 - **Ability to control variables**
 - **Ability to leverage assets for maximum return**
 - **Ability to be lean and agile**
 - **Ability to create and sustain a competitive advantage**
- **Think: strategic, integrated, expandable**
 - **Not: limited-use, single program, disassociated**

American Ordnance Model

- Full-service Commercialization at Iowa & Milan AAPs
- Government retains ownership
- American Ordnance:
 - Operates both plants under FUC
 - Has flexibility to consolidate/transfer operations and integrate systems
 - Maximizes use of Best Commercial Practices
 - Commits to 5-year fixed catalog pricing
 - Commits to invest
 - Enhances competitiveness for international/third-party sales
 - Preserves key production base resources



Depot Privatization

- **Complicated by numerous laws & regulations**
- **Typical scenario: BRAC, Outsourcing, Real Estate Transfer**
- **Examples of Privatization In Place -- NOSL & NAWC**
 - **Pass-through leases + work contracts**
 - **“Hot Turnovers”**
 - **NAWC seen as most successful**
 - » **Viewed differently by contractor**
- **Alternative: Public/Private Partnering**

Summary

- High infrastructure costs mandate spin-off of more government functions and assets
- Privatization comes in many forms
 - Market factors not often understood
 - Not a panacea
- Commercialization and Partnering offer alternatives
 - Achieve most objectives of privatization
 - Faster, Cheaper, Better
 - a win-win framework





TACCOM

1998

Munitions Executive

Summit

US Army Tank-automotive and Armaments Command

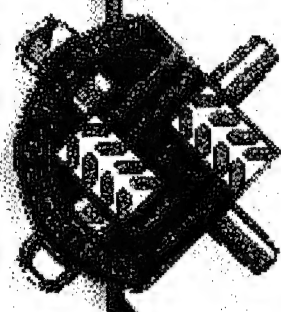
Presented by

MG Roy E. Beauchamp

CG, US Army Tank-automotive and Armaments Command



☆☆ Corporate Vision

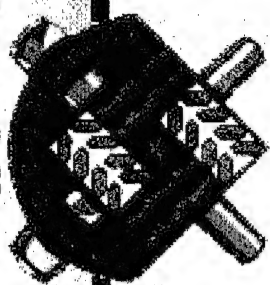


- To make the technology and sustainment systems work for soldiers through the seamless integration of S&T, R&D, Acquisition, Log Sustainment and Soldier Readiness.
- To create a business environment at TACOM where every associate understands the requirement to control costs and manage from the customer perspective and understands their inherent responsibility to do so.





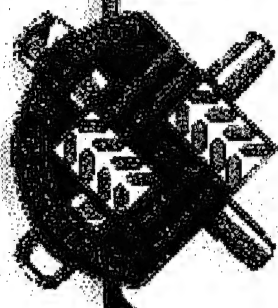
BUSINESS VISION



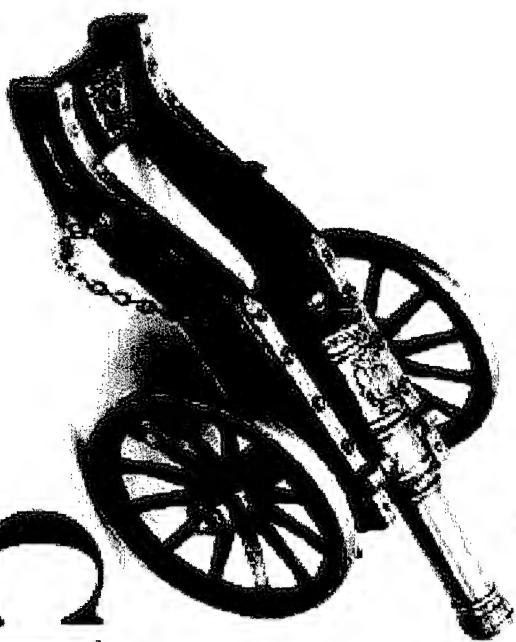
- A fully integrated business environment connected by a fully integrated data environment using commercial business processes to integrate business operations within each organization, across major Commands, across Services, across DoD and across Industry.
- A corporate management structure for which the organizing principle is multi-functional work teams to institutionalize the concept of integrated process teams; a highly decentralized structure which uses the integrated data environment to link desk top "servers" to facilitate the transformation of data into actionable information to enable more efficient, fully integrated business operations at reduced cost.



★★ Purpose of Presentation



- TACOM's Corporate Response to change
- TACOM's Core Competencies-Munitions Focus

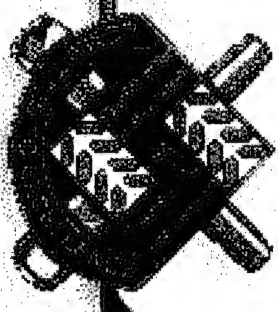


Change





Briefing Outline

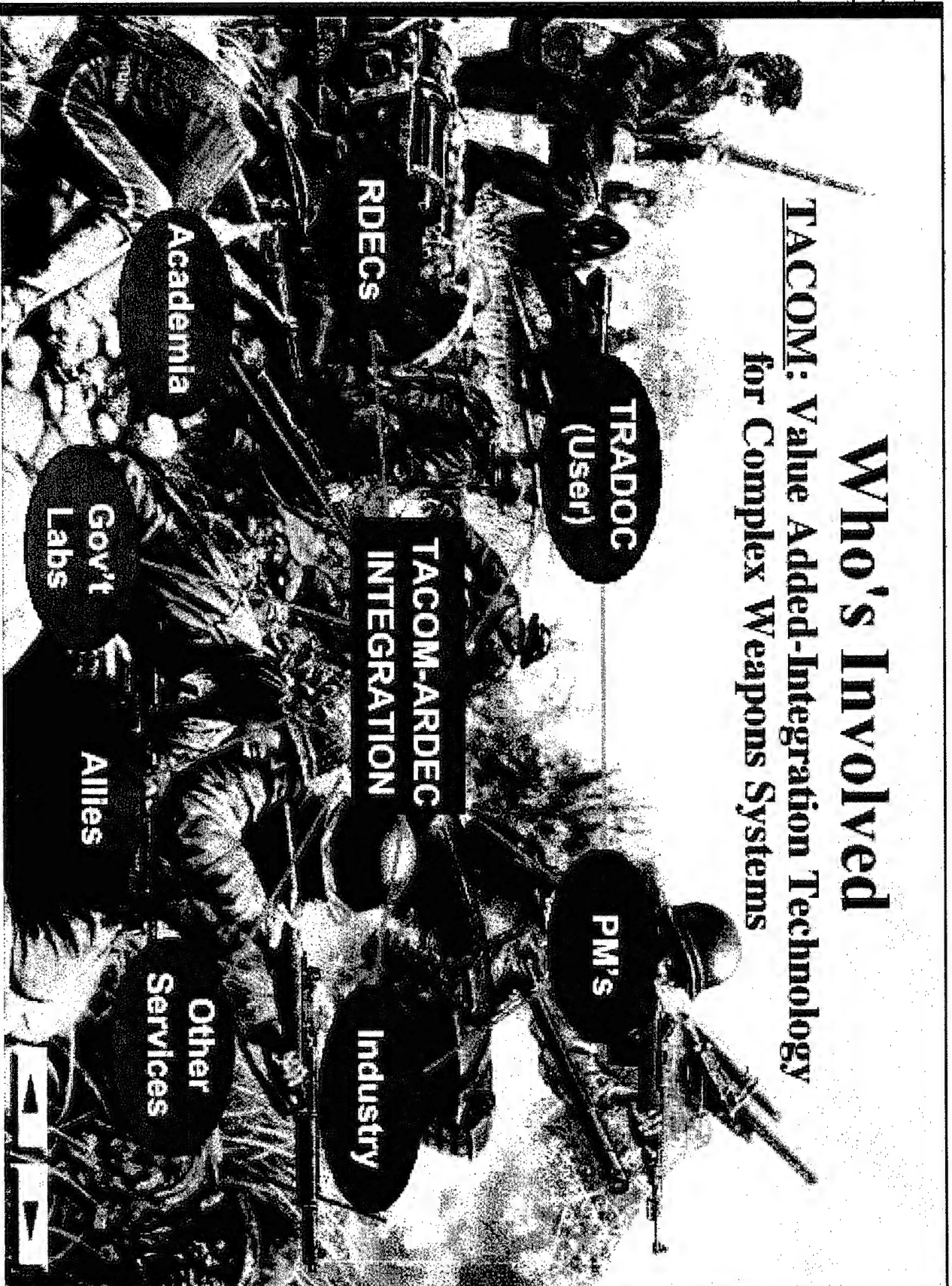


- **Background**
 - A Changing Military Perspective
 - Impact on Ammunition Systems
- **Integration is a TACOM Core Competence**
 - TACOM Mission
 - ARDEC/TARDEC focus
 - Organization for the future
- **TACOM Meets the challenge of doing business in the Future**
 - TACOM of the Future
 - Integrated Ammunition Systems



Who's Involved

TACOM: Value Added-Integration Technology for Complex Weapons Systems



TACOM MISSION

-To Generate Warfighting Capability for the Army

-To Sustain the Warfighting Readiness of the Army

-To manage the Army's Investment in S&T, R&D and Sustainment for the Army

3,341 Weapon Systems
34, 138 NSNs
300 Systems in Acq Pipeline

-Serve as the Life Cycle Manager and Integrator for Ground Combat Equipment

Tank-automotive & Armaments CONMand

Research, Develop, Field and Support

Mobility and Armament Systems Total Life Cycle

To Support Army Readiness

Combat Vehicles
Tactical Vehicles
Trailers
Construction Equipment
Material Handling Equipment
Tactical Bridges

Fuel & Water Distribution Eqpt
Sets, Kits & Outfits
Shop Equipment
Chemical Defense Equipment
Howitzers
Large Caliber Guns

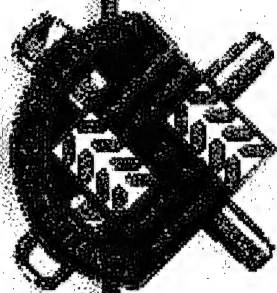
Mortars
Rifles
Machine Guns
Ammo
Aircraft Armaments
Demolitions & Explosives

Rail
Watercraft
Patrol & Lub Eqpt





Ammo Mission



Fire Support



Mounted Operations



Special Operations



Dismounted Operations



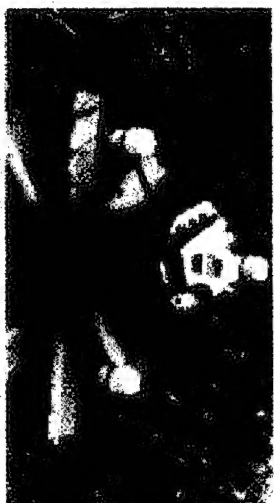
Combat Service Support



Aviation Armament

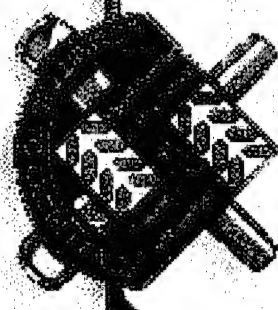


Counter - Mobility





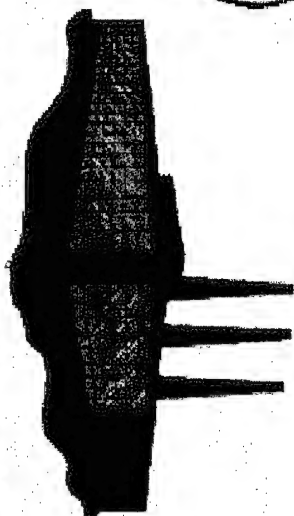
Business Factors



Personnel
Reductions

Acquisition Reform
Life Cycle Mgt.

Ammunition
Budgets



Ammunition Business Base

AAN Ammunition
Requirements

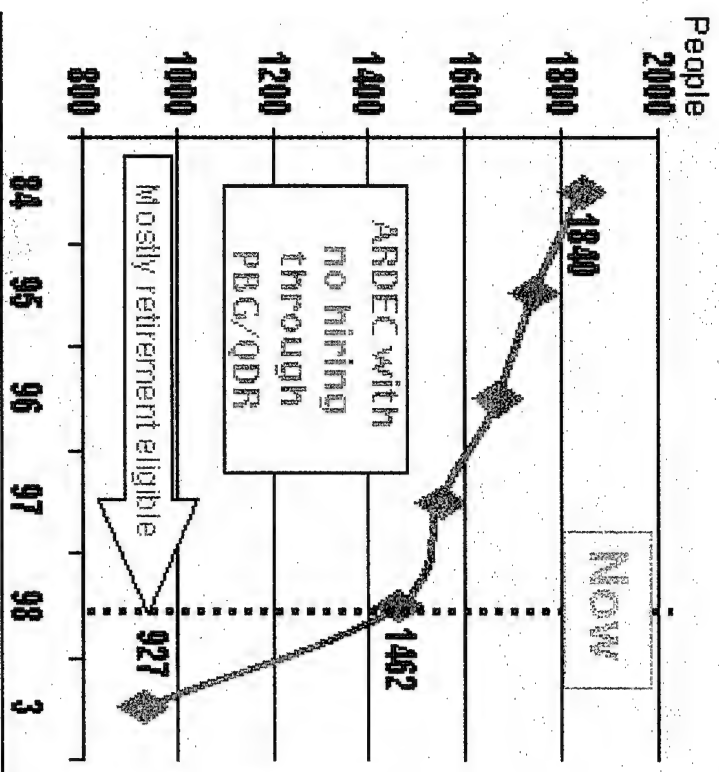
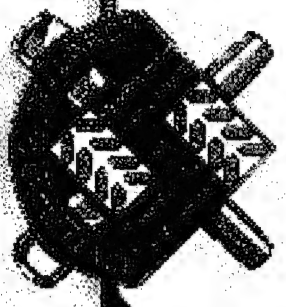
Ammo Base
Reductions

Changing Military
Perspective





Armaments Skill Base History & Projected



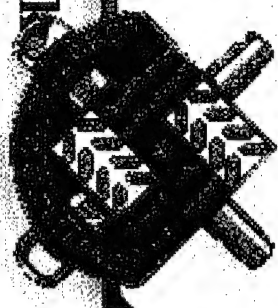
TACOM has done well so far
but
we are on the edge of a deep chasm

ENGINEERS & SCIENTISTS



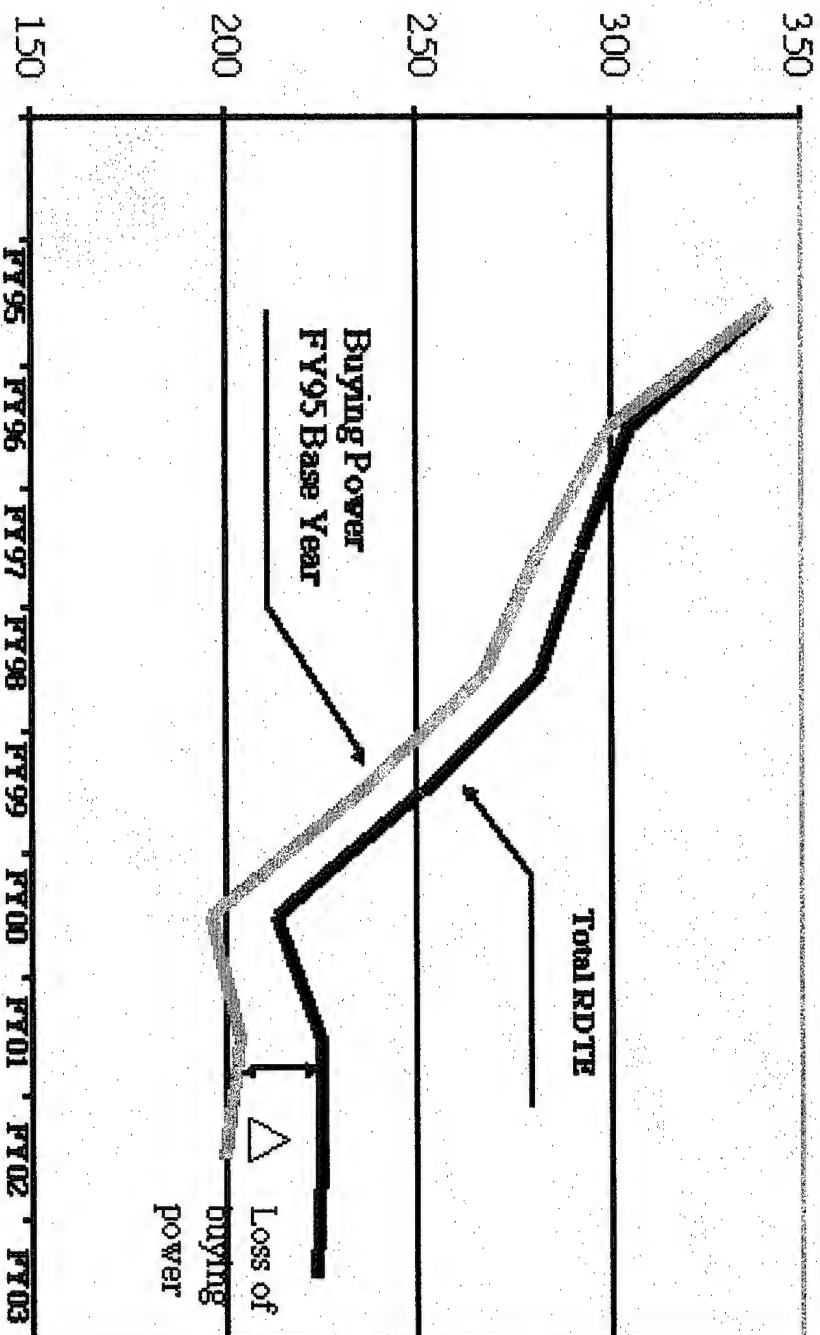


Decreasing Revenues



\$ Millions

TACOM-ARDEC RDTE Revenue Outlook



Fiscal Year



Changing Perspective



- **Changed Military Threat**

- Regional Conflicts
- Proliferation of Chemical/Biological/Conventional Arms

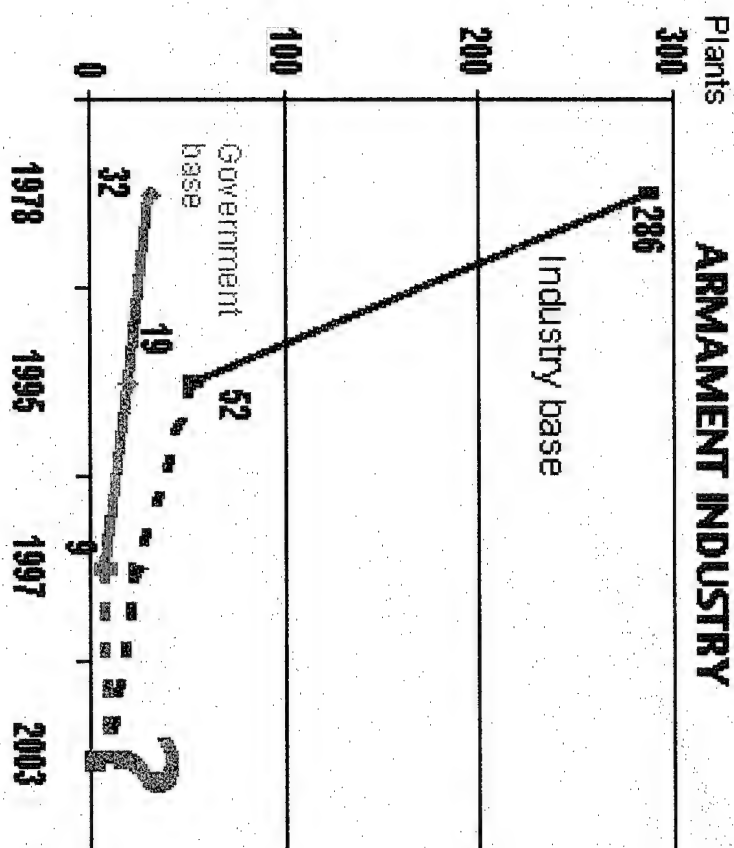
- **Changed Military Tactics/Strategy**

- US Forces Will Be CONUS-Based
- Light, Deployable, Lethal Forces
- Emphasis on Deep Strike, Early Entry Forces, Real-Time C4I

- **Smaller Army**

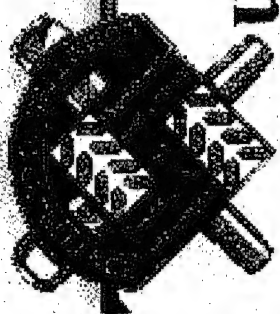
- More Lethal/Survivable

Ammo Base Organizations





Changes in Ammunition Requirements



- Highly Specialized
- More Sophisticated

Next to fuel, ammo is the largest tonnage on the battlefield...

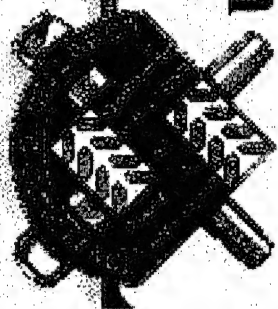
- More Costly
- More Technology Intensive



Lighter is better

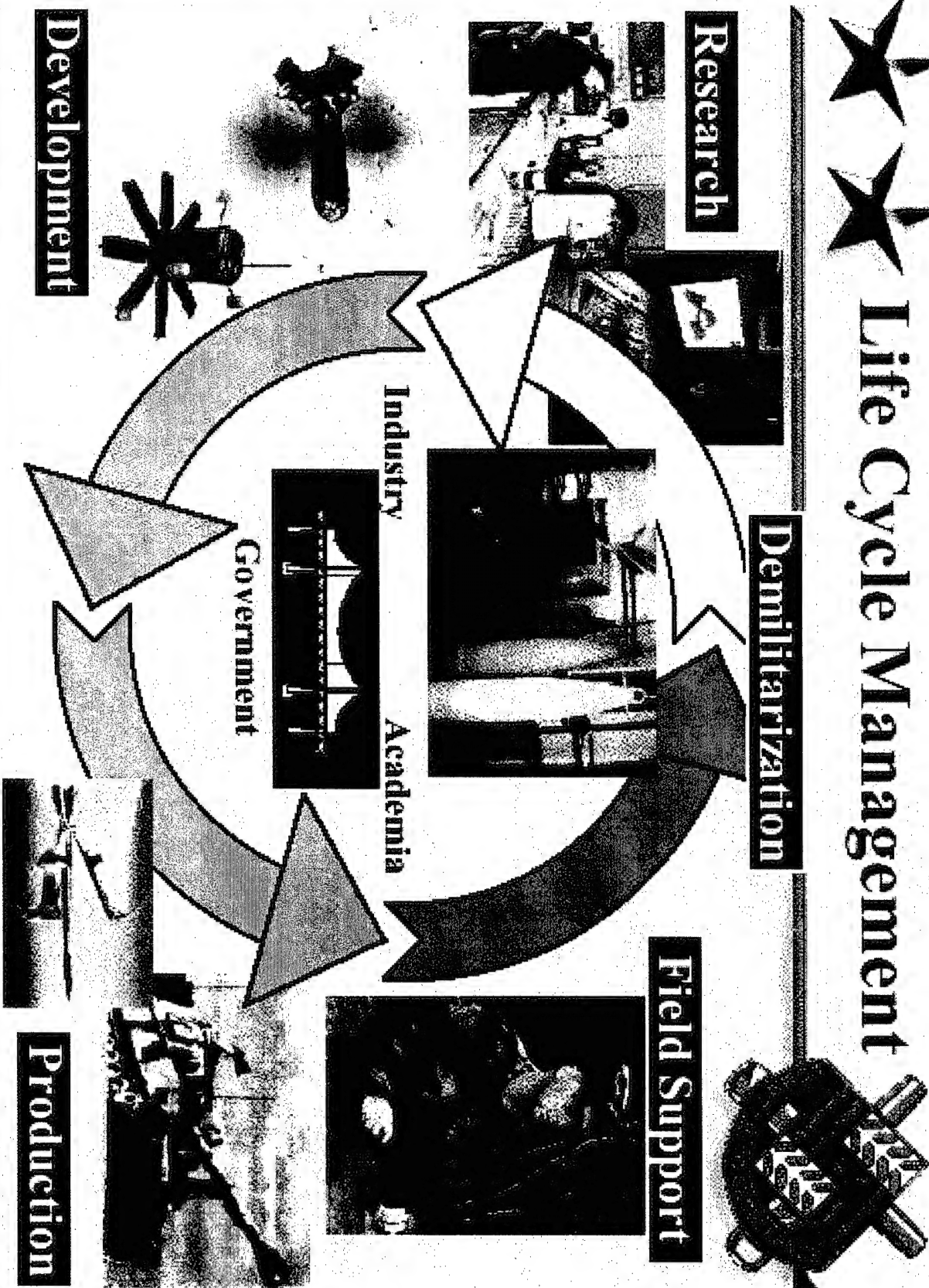


Ammunition Acquisition Reform



- Army XXI Reinvention Laboratory
- Cost Reduction and Reinvestment Initiatives
- PEOs and Major Commands required to focus on Management of Total Life Cycle
- Modernization Through Spares Initiative
- Army Purchase/Credit Card usage
- Established a Paperless Contracting PM Office
- Single Process Initiative (SPI) implementation
- Past Performance Information Management System (PPIMS)
- DOD Standard Procurement System (SPS)

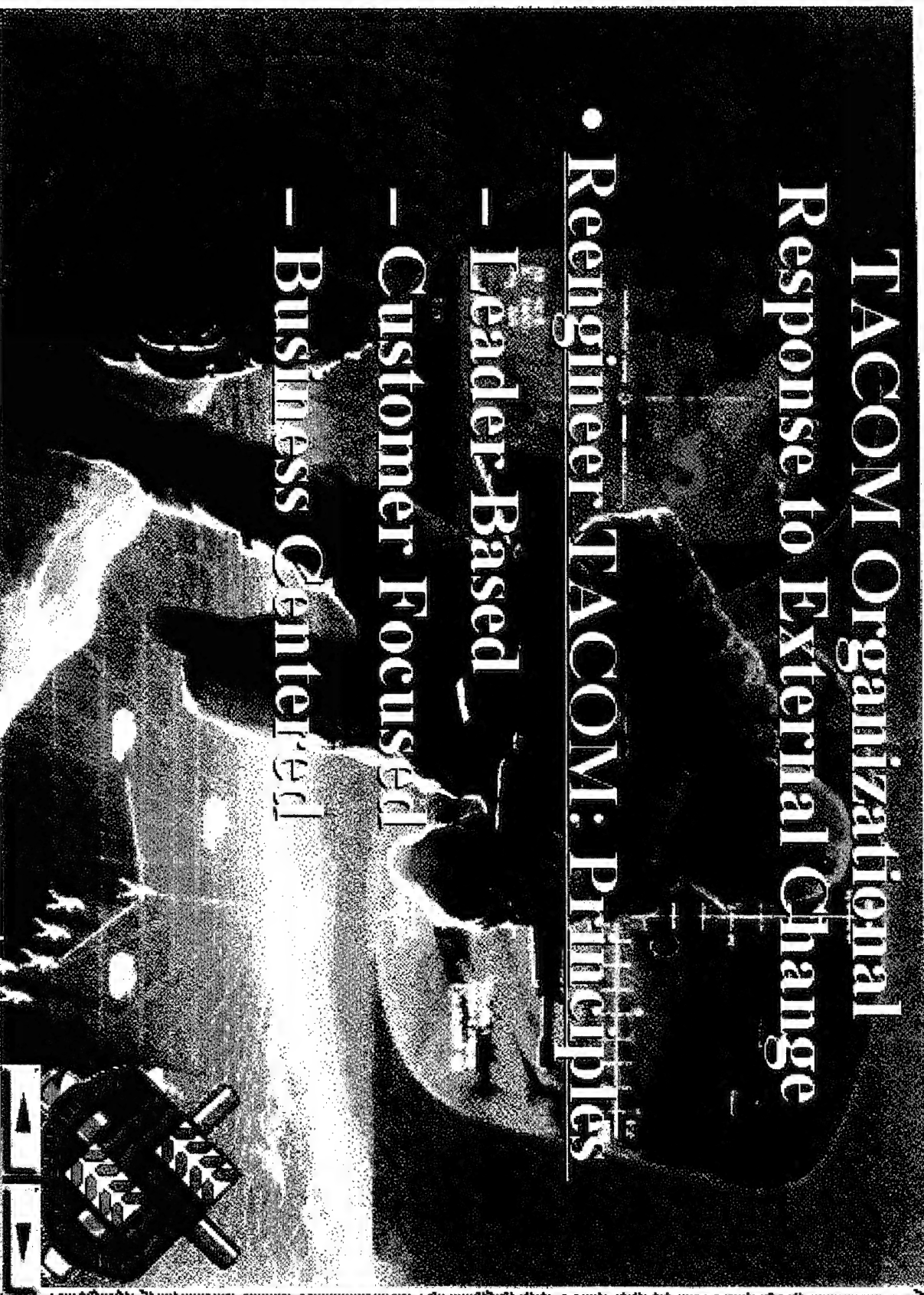
★★ Life Cycle Management



TACOM Organizational Response to External Change

• Reengineer TACOM: Principles

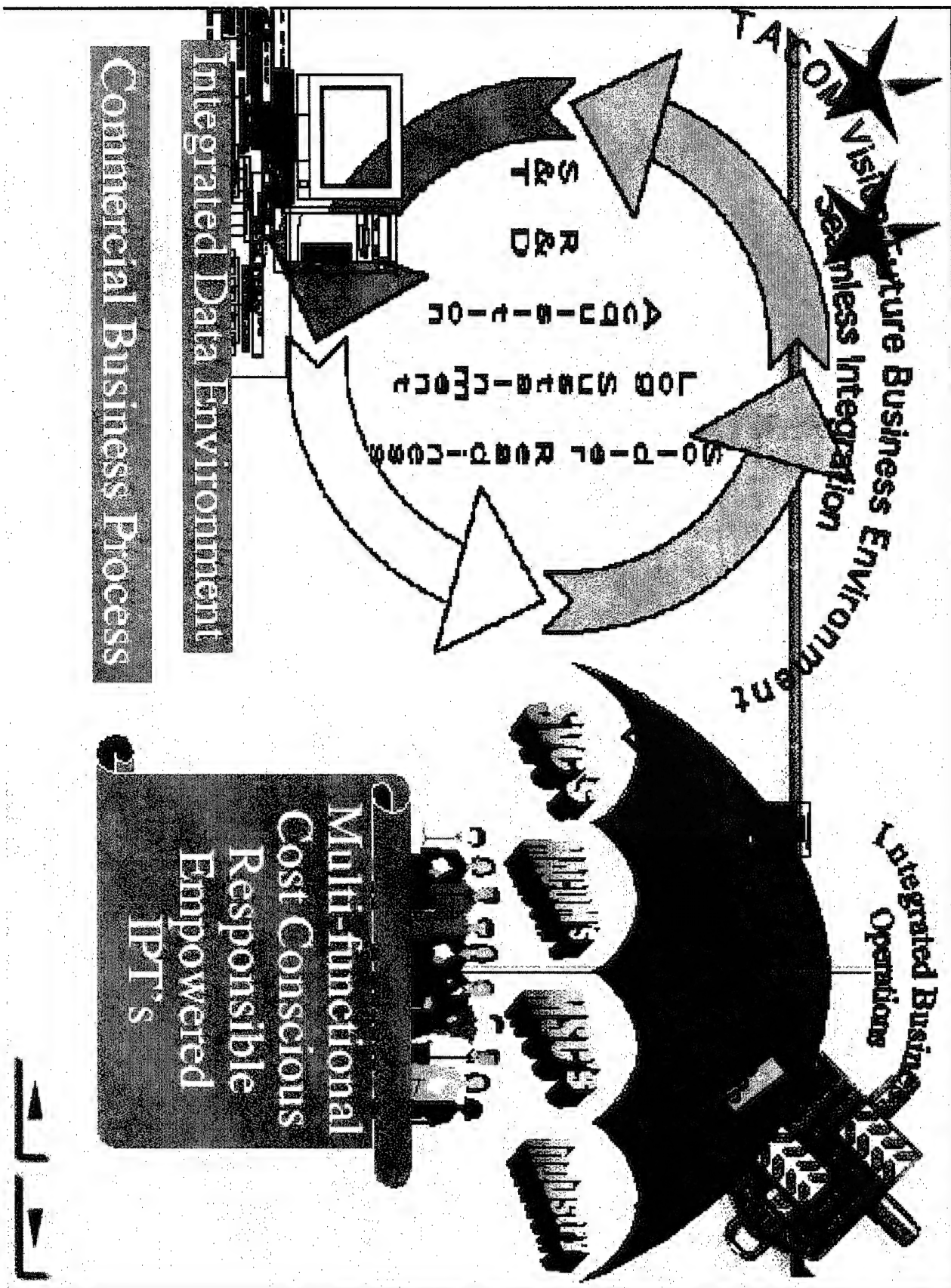
- Leader Based
- Customer Focused
- Business Centered





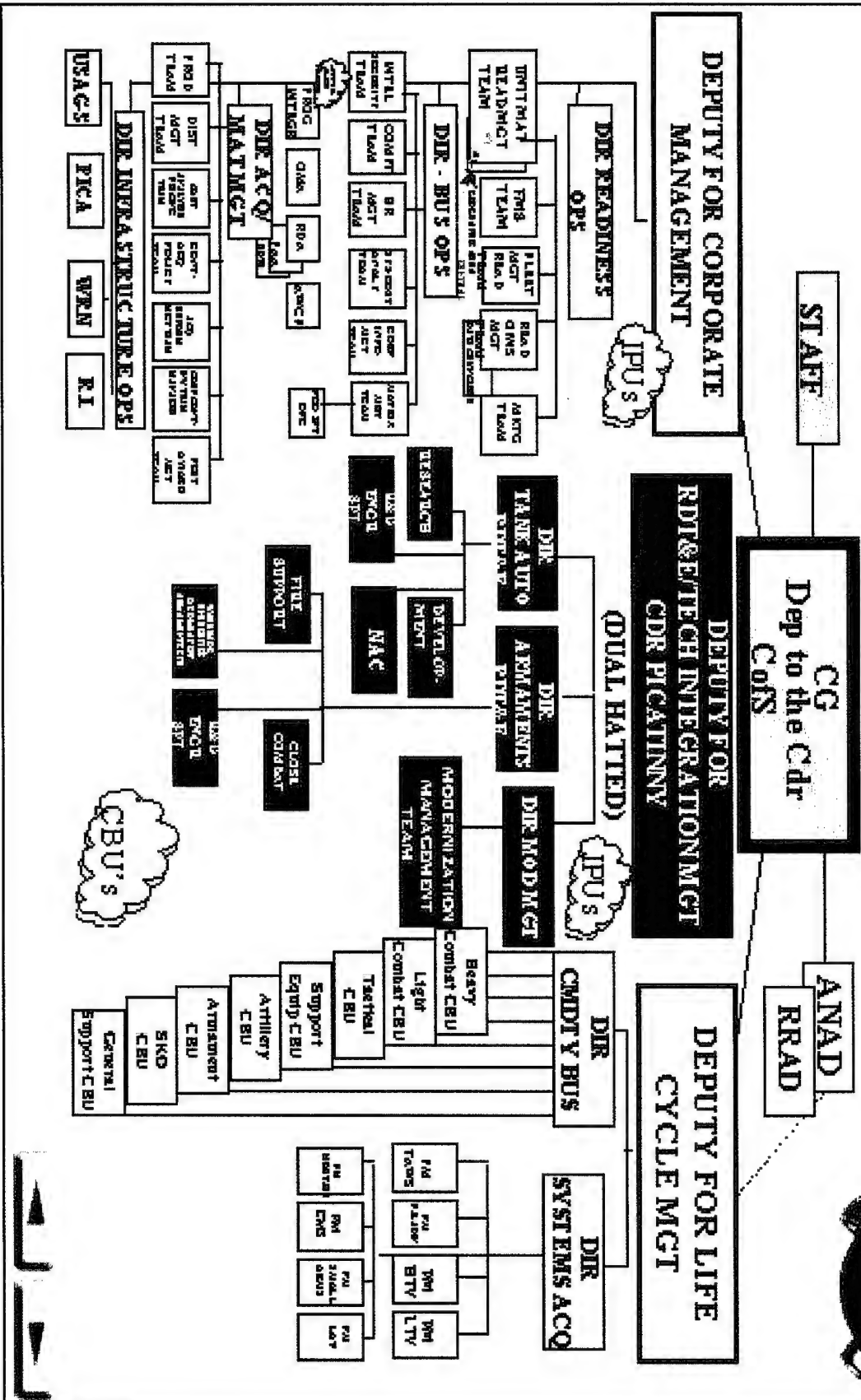
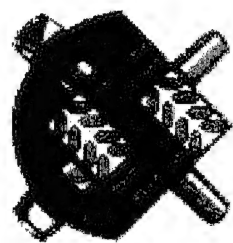
Where We Need To Go

- Multi-Functional Work Force
- A Growing, Learning, Teaching Organization
- Fully Integrated Data Environment
- Fully Integrated Business Environment
- New Organizational Structure



Tank-automotive and Armaments Command

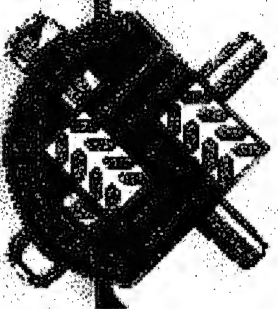
TACOM of the Future (Concept)





Integrating ARDEC With TARDEC: Synergy

Key Areas



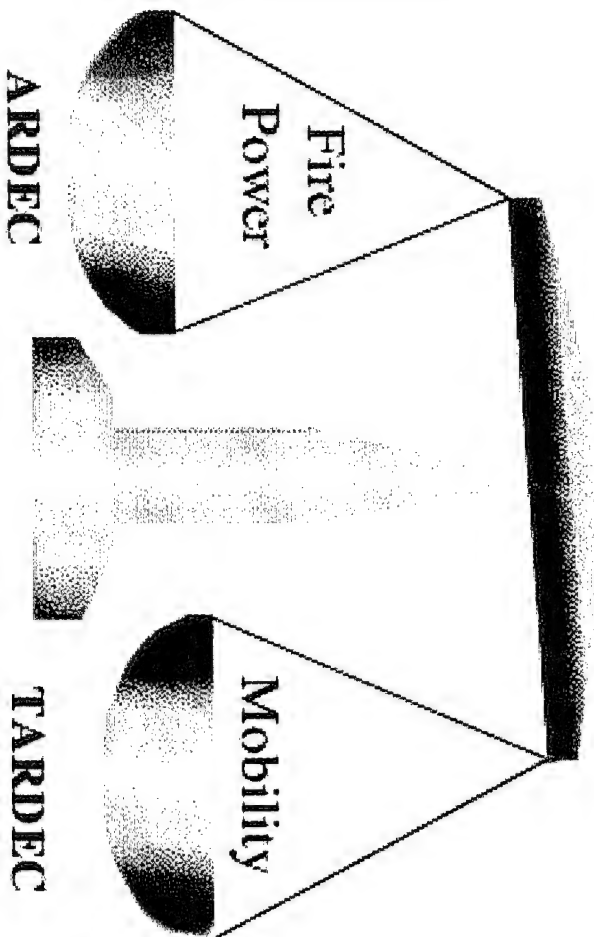
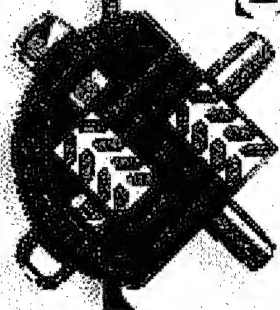
- Tech Base
- ASCO
- TC, Material Release, Environmental
- Life Cycle Software Engineering
- Tech Data
- Engineering Support, OSCR, Modernization through Spares, Depots, DCA
- Organic vs Matrix Engineering support
- Pollution/Corrosion Prevention
- Modeling and Simulation
- Strategic Planning
- Mantech
- Configuration Management
- Career Development
- CRDA, Dual Use Technology and Small Business Innovative Research
- CP2, Government Source , QSL

- No
 - Relocation of human resources
 - Homogenization of organizations
- Yes
 - Harmonization of business processes



The Future TACOM RDTE Challenge

CSA rep AAN = "Knowledge and Speed"



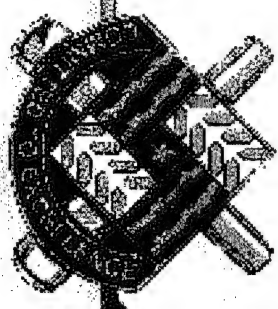
Find the Balance
Balance = Integration

- Modeling and Simulation
- User Requirements range, speed, lethality, etc
- People Skills
- Electronic Data Management
- Fire Control + C3I





Multiple Ammo Integration Levels



- Air Land/Army-Joint Services
- TACOM with Industry
- TACOM with Ammo Community & PMs
- Ammo with Weapon System



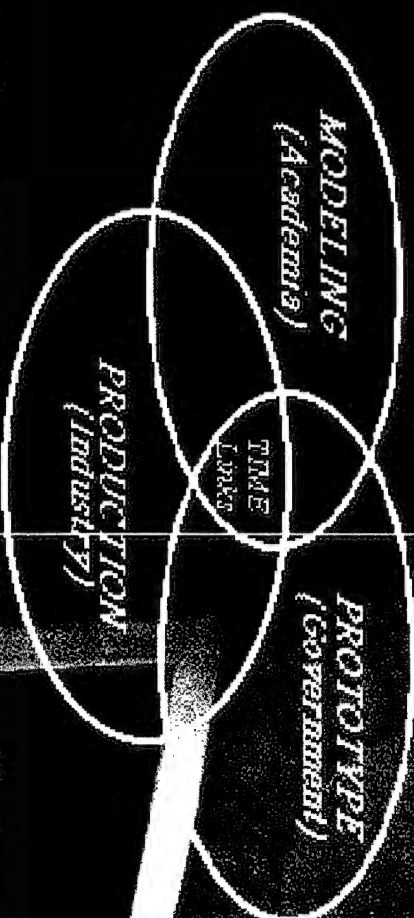
Many Players and Multiple Dimensions





Integrating ~~FACTOR~~ with Industry

Totally Integrated Munitions Enterprise (TIME)

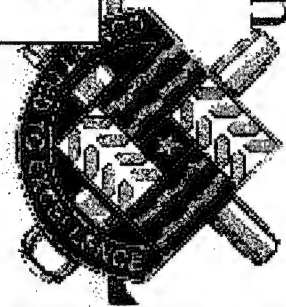


- Integrating the combined capabilities of Industry, Government, Revolutionize the industrial base for a virtual enterprise.
- Technically advanced manufacturing processes
 - Innovative product development processes
 - Modern management practices





Integrating Organizations with Mission and Processes



PEO-GCSS
☆☆

IOC
☆☆

TACOM
☆☆

Ammunition
Executive
Council

Integration
Office

Unresolvable
Issues

Seam/Genetic
Issues

Artillery

Mortar

Small
Arms

Tank

Mines

Fuze

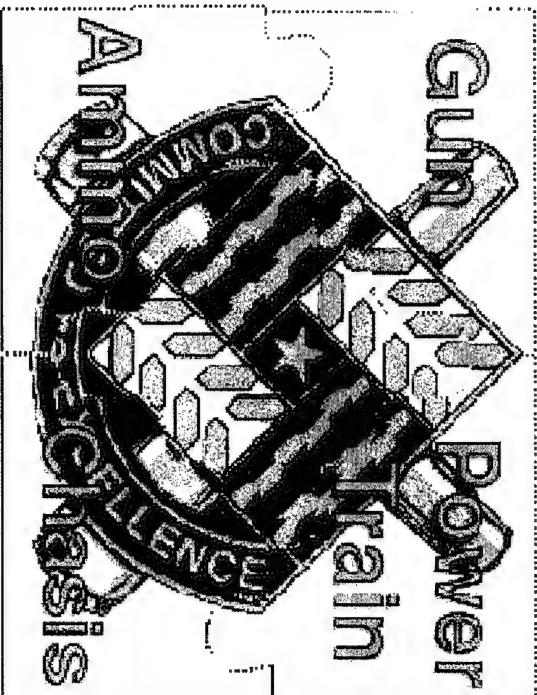
Business Case IPTs

Ammo
Logistics

★★ TERM SYSTEM INTEGRATION CONSIDERATIONS

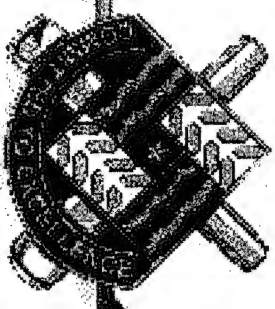
TERM integration into M1A2 SEP requires harmonizing the following capabilities:

- Global Positioning System (GPS) and Inertial Measurement Unit (IMU)
- Turret/Hull position sensor and Hull Cant sensor
- Fire Control Computer software development/validation
- FBCB2 communication methods and protocols
- Crew interface for firing non line of sight missions





Closing



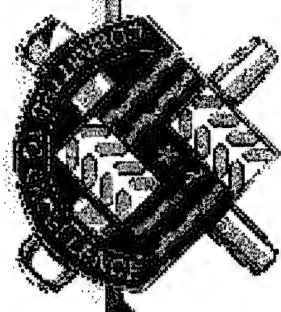
Critical to the future Warfighter

- Integration of Ammo processes
 - TACOM
 - Industry and the private sector
 - DoD
- Major points:
 - Smaller technology based Army
 - Ammunition is most critical commodity
 - Investment in technology to enhance: lethality, survivability, and producibility is essential
 - Integration of complex guns, ammo, & fire control technology into weapon systems is our core competency





Conclusions



- Current business environment is effecting the ammunition business
- Meeting the mobility and firepower requirements of future warfighters will necessitate the systems integration of gun, ammo and platform technology
- The TACOM of the future is posturing itself to meet both the technology and business challenges of the 21st Century



PEO GCSs Overview



16 September 1998

Munitions Summit

Presented by
MG John F. Michitsch
Program Executive Officer
Ground Combat and Support Systems



Agenda

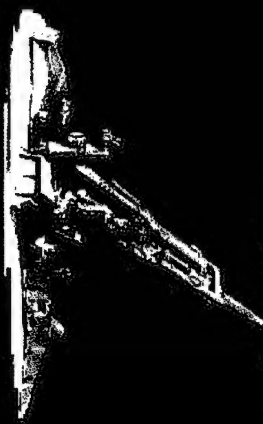
- Mission
- Organization
- PEO GCSS Focus
- Munition Programs
- Total Life Cycle Management Policy & Approach
- Our Role in Life Cycle Management
- Business Plans Considerations
- Advanced Warfighting Experiments
- Thoughts to Leave You With



PEO GCSS Mission

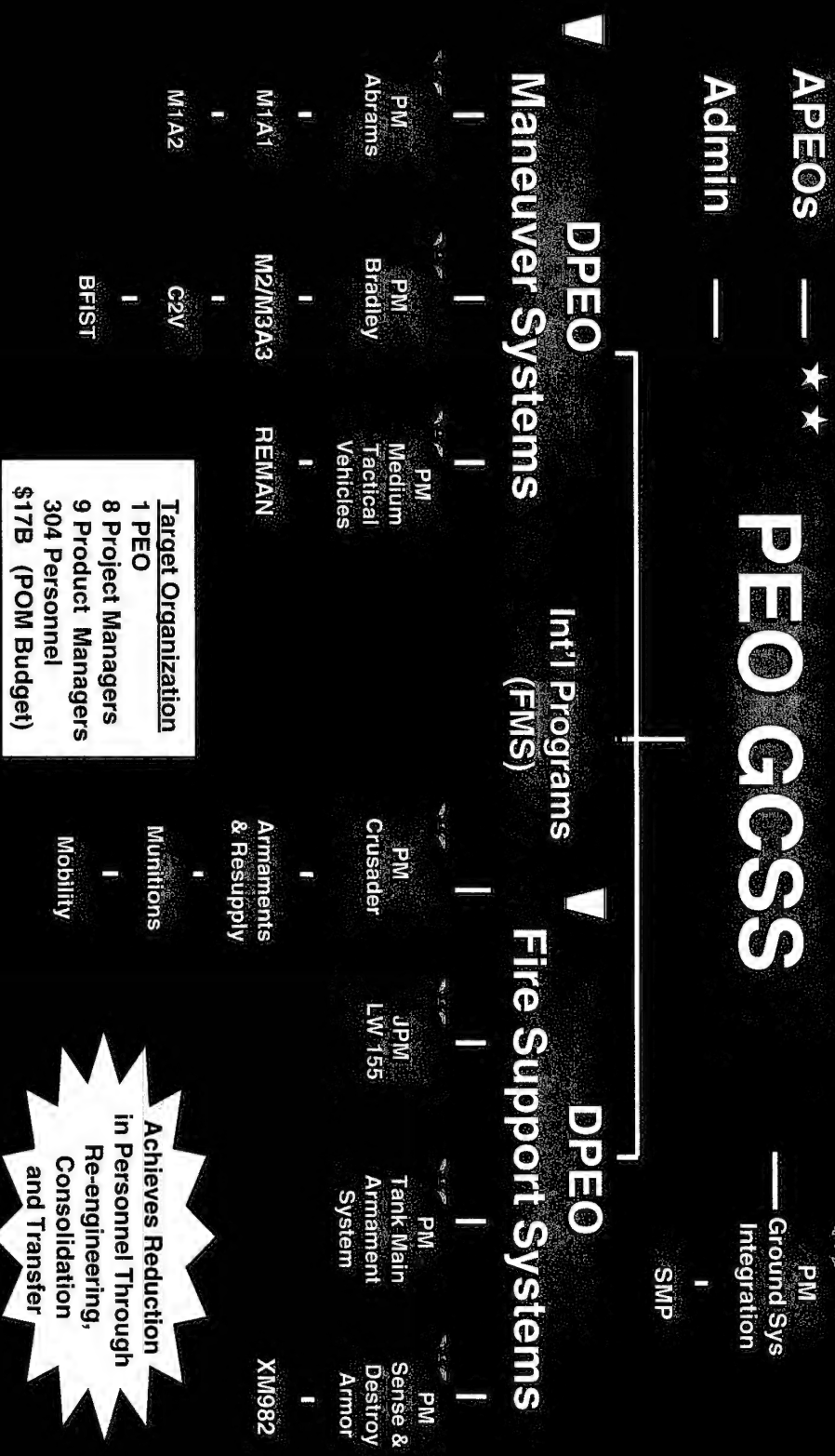
Integrated, Mission Management of Development, Production, Fielding, O&S, and Demolition Ground Control and Support Systems

- Provide Programmatic Oversight and Direction.
- Ensure PMs are Adequately Resourced.
- Enforce Program Baseline.
- Life Cycle Management
- Represent PMs with DA, OSD, Congress.
- Add Value to PMs' Activities by:
 - Providing Broader Perspective.
 - Integrating Across PM Lines.
 - Serving as an Honest Broker.

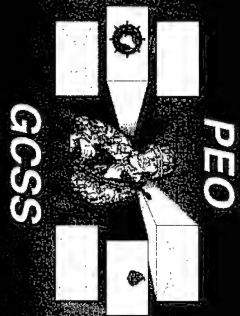




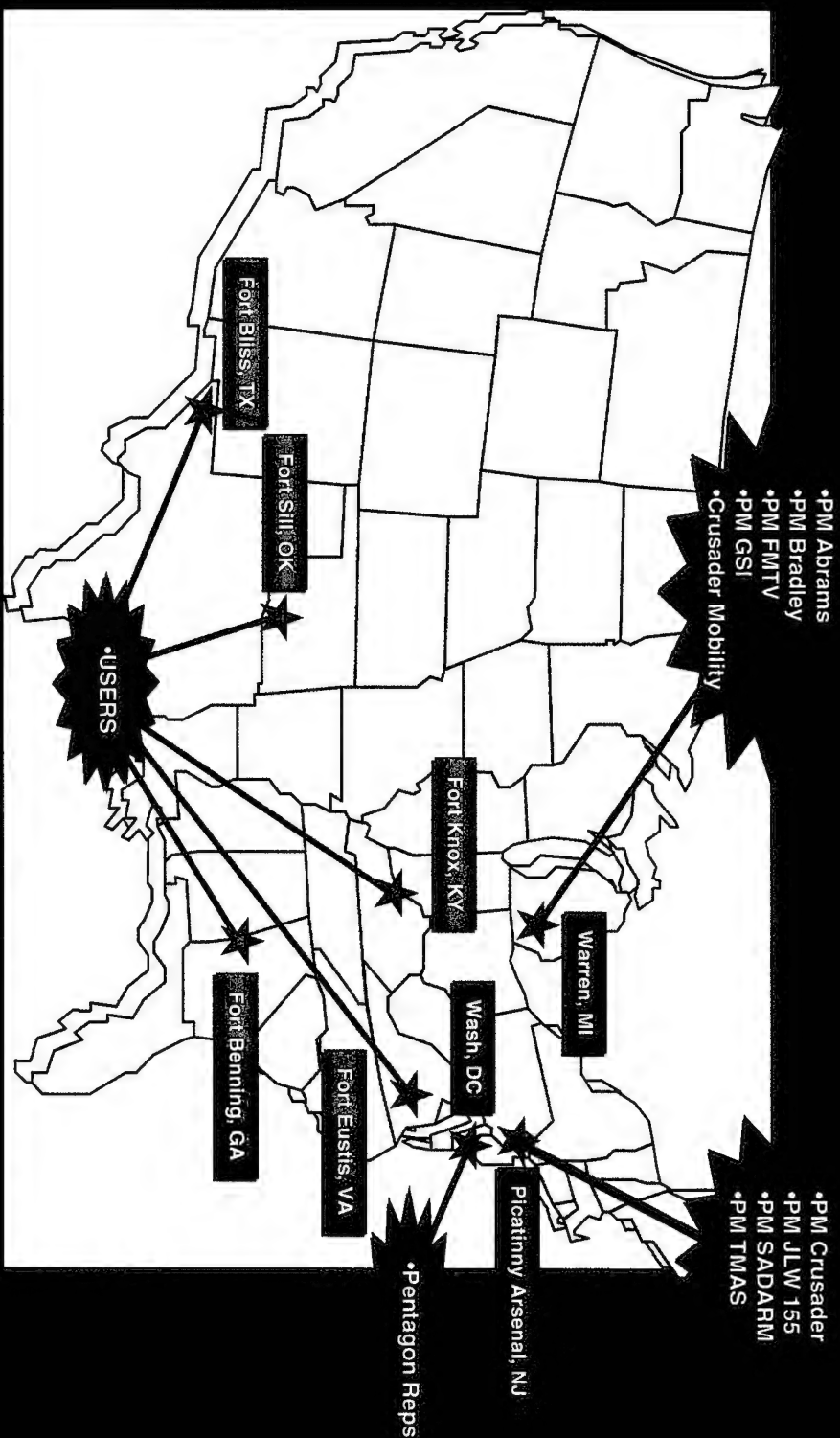
Organization



**Achieves Reduction
in Personnel Through
Re-engineering,
Consolidation
and Transfer**

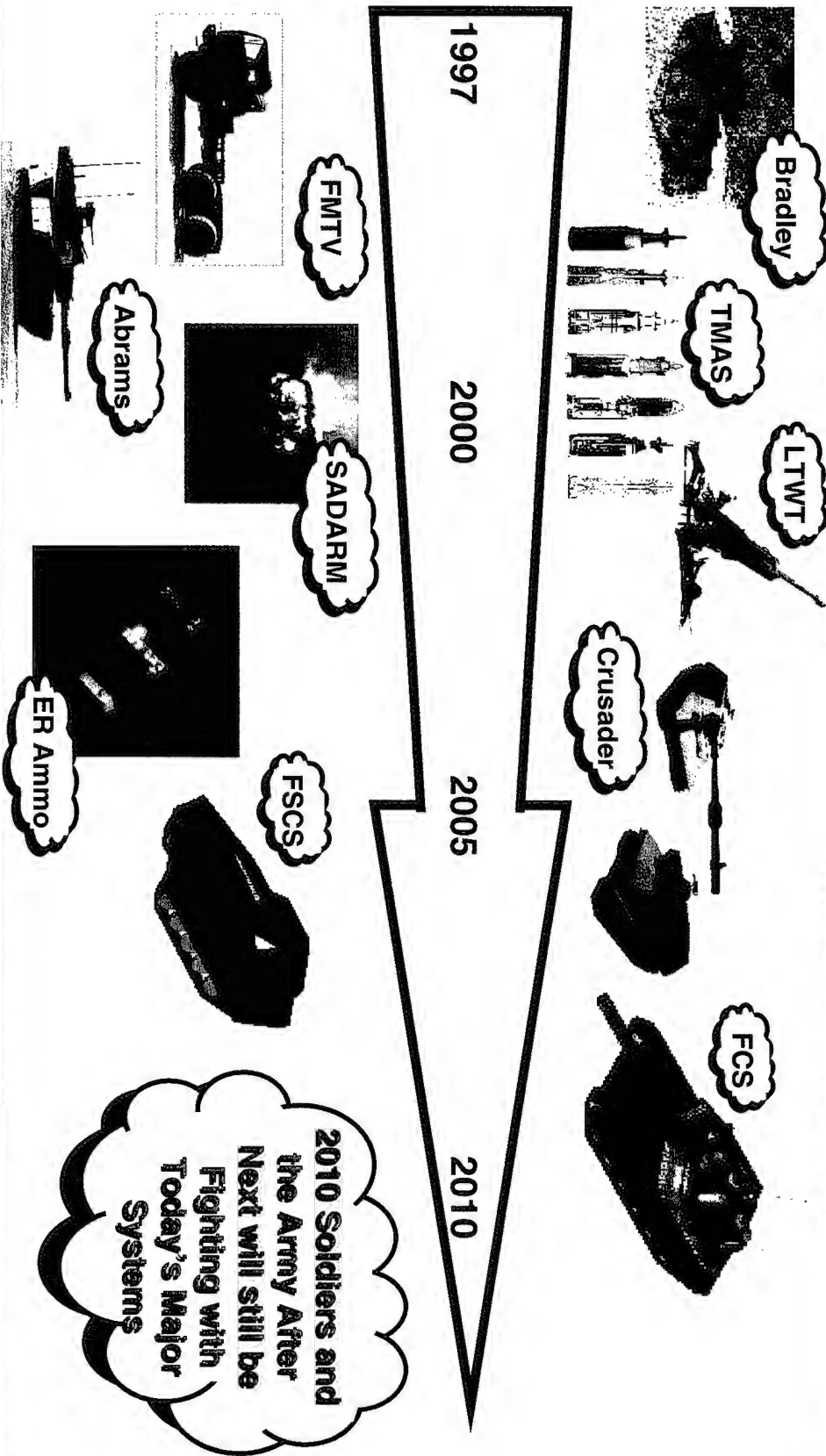


Ground Combat & Support Systems Where We're Located





PEO GCSS Focus





Modular Artillery Charge System (MACS)

CURRENT CHARGES

M2A1 (Green Bag)

M4A2 (White Bag)

M119A2 (Red Bag)

M203A1

MACS

XM232

XM231



TOWED



PALADIN



TOWED



PALADIN



CRUSADER

- Compatible With All 39-cal and ERO 155mm Artillery Systems:
 - Fielded: M109 series SPH, M198 Towed
 - In Development: Crusader SPH, JLW-155 Towed
- Automated Handling Compatible:
 - Distinguishable for Manual
 - Rigid Combustible Case
- MANPRINT:
 - Bi-Directional Igniter
 - Any Order
- "No-Excess" Propellant
- Cost Savings for Training & Operations
- Modular Charge System (MCS) for 155mm Artillery JBMOU
- Milestone II 23 Sep 96
- Enter Production in FY2000

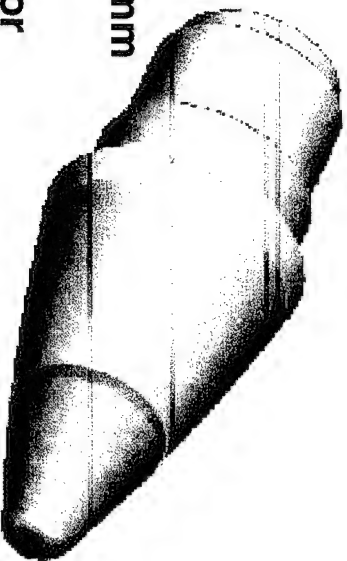
Soldier and System Friendly



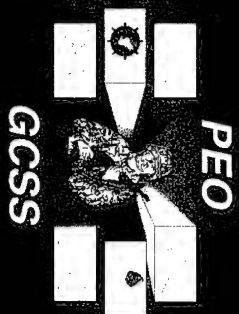
Multi-Option Fuze for Artillery (MOFA)

Performance Features

- Integrates Four Function Settings for Bursting Projectiles:
 - Proximity, Time, Point Detonating, and Delay
- Fuze Compatible with All Current 105mm and 155mm Cannon Artillery Systems
- Inductive (Man-Out-of-Loop) Setting Capabilities for High Rates of Fire
- Advanced Technologies Include:
 - Monolithic Microwave Integrated Circuit (MMIC) Chip, Patch Antenna, Harmonic Signal Processing, and Electronic Counter Measure (ECM) Chip
- Successful Qualification Test - July 96
- Pre-Production Qualification Test (PPQT) In Progress



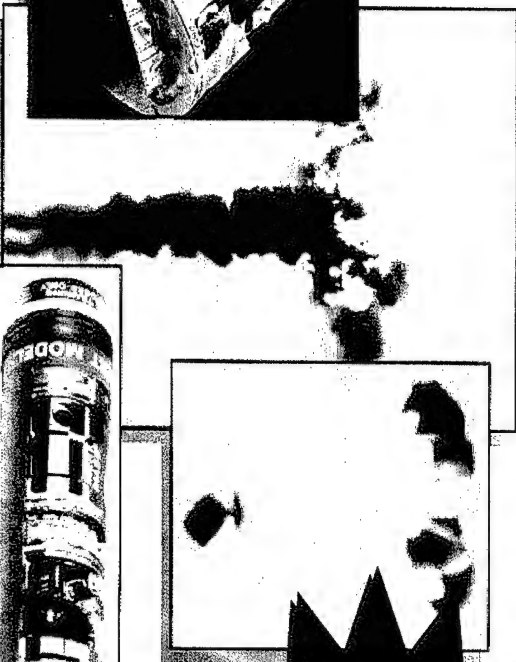
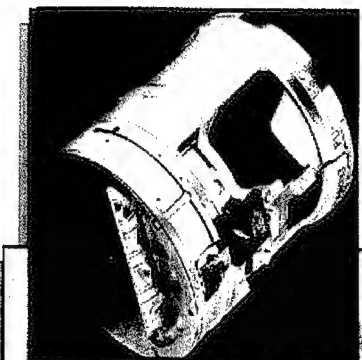
**"World Class"
Artillery Fuze
On Schedule for
FY 99 TC**



M898 SADARM

What Is SADARM?

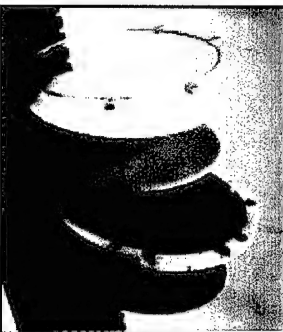
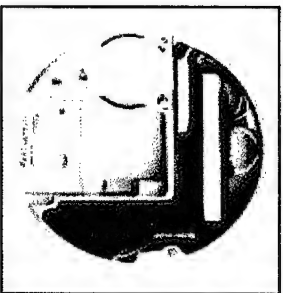
- First Smart Munition for Field Artillery
- Provides Unique Capability to Kill Hard Point Targets



- Multi-Sensor, Fire & Forget, Top Attack
 - Counterbattery Weapon, Secondary Anti-Armor
 - Countermeasure Resistant
 - Explosively Formed Penetrator Defeats All Known Armored Targets From Top



SADARM PICOTS



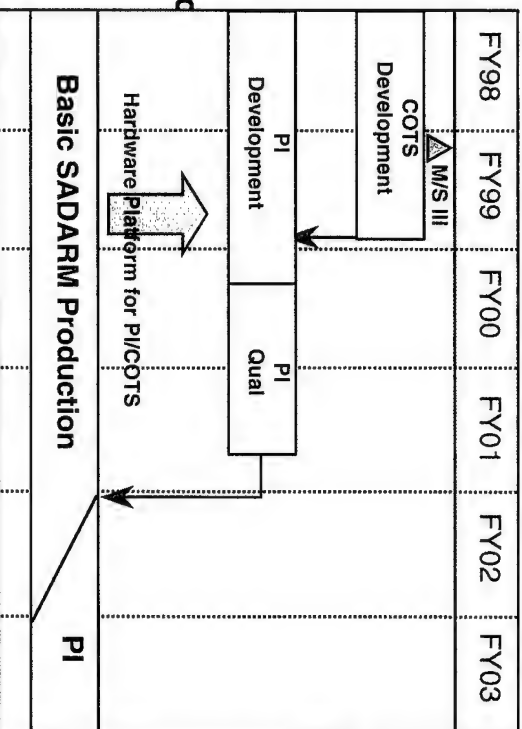
Electronics Module Millimeter Wave (MMW)
Assembly

Objectives

- Reduce Submunition Unit Cost By 22%
- Eliminate Custom Components
- Insert Into Basic Production In FY02
- Increase Effectiveness

Key Features/Benefits

- Fewer Parts
- Commercial Packaging
- Less Complexity
- Structural Improvements
- Avoids Parts Obsolescence
- Higher Yield MMW



Linkage to Basic

- Parts for Qualification
- Support Personnel Working Both Programs
- Production Line Learning



XM982 System Description

Mission

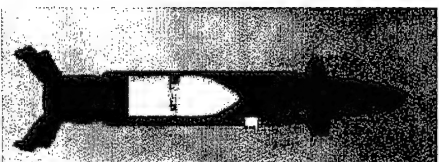
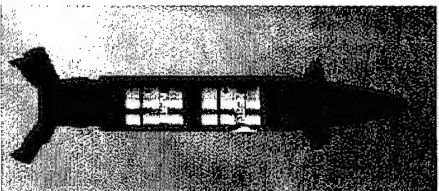
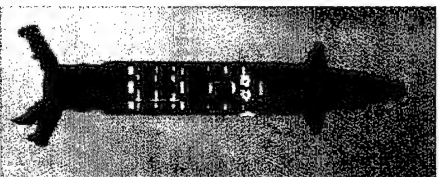
- Provides the maneuver force with improved fire support through an Extended Range, fratricide reducing, accuracy enhancing, more lethal family of 155mm projectiles in support of Force XXI operations.
- DPICM with 64 Submunitions
- SADARM with 2 PI-SADARM Submunitions
- Unitary with Bunker Penetrating HE Warhead

Capability/Improvements

- Increased Range:
 - Paladin / M198 / JLV155: 28 to 37 Km
 - Crusader: 40 to 47 Km
- Increases Survivability Through Greater Stand-off Ranges

Initial Operational Capabilities

- DPICM 1Q FY04
- SADARM 1Q FY07
- Unitary 1Q FY08



Characteristics/Special Features

- One Meter Length / 106 lb
- DPICM Submunitions with Self-Destruct Feature
- On-Board Self Locating System (SLS)
 - GPS / INS Guidance
- Inductive Set Integral Fuze - PIAFS
- Fin Stabilized Glide Air Frame
- Anti-Jam Features
- Modular Projectile Configuration



M795 System Description

Mission

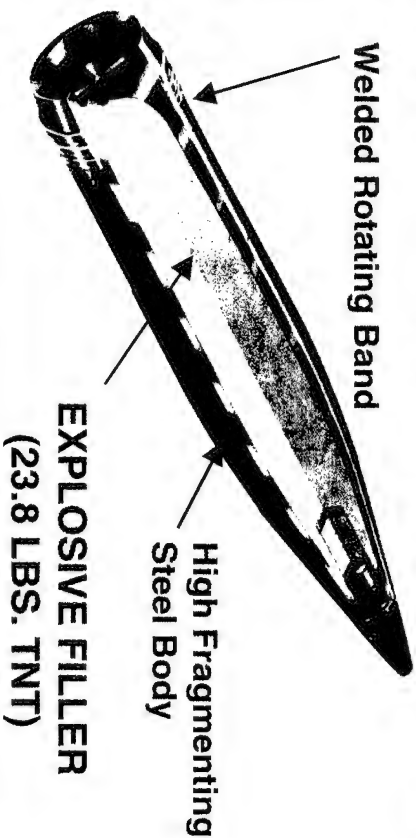
- Provides Extended Range Fire Support for: Harassment and Interdiction (H&I), Fragmentation, Mining, and Blasting Effects.

Performance

	<u>M107</u>	<u>M795</u>	<u>M795E1</u>
• Weight (lbs.)	95	103	103
• Payload (lbs.)	15.0	23.8	22
• Paladin Range (Km)	17.5	22.5	28.5
• Crusader Range(Km)	17.5	26 to 28.5	34 to 36

Special Features

- Ballistic Similitude for M483A1 & SADARM
- M795 Compatible with M203A1 and MACS 6
- Significant Lethality Increase Over M107
- Personnel 1.5 to 2.0
- Trucks 1.2 to 1.8
- Hard Targets 1.0
- Train Like we Fight
- M795 Training Round (Proposed)



<u>M795</u>	FY95	FY 96	FY97	FY98	FY99
<u>Funding</u>	\$53.6	\$51.6	\$39.9	\$35.2	
<u>Quantity</u>	79,468	130,956	84,210	80,000	

M795E1 is not Funded

Delivery Data

Material Release 1QFY99

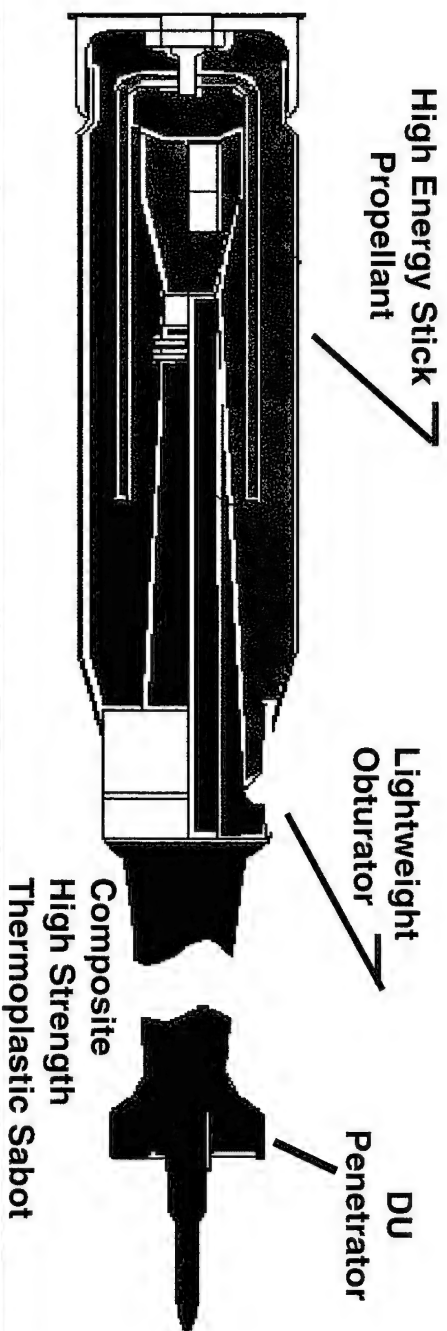
On Track



M829E3

- SOURCE SELECTION
- ORD & MSII Approved
- TEMP Signed
- Contract Signed
- ATK Awarded Contract
- EMD Kick-off 21 SEP

OBJECTIVE:
Conduct MS II Review 3Q98
Award EMD Contract 4Q98



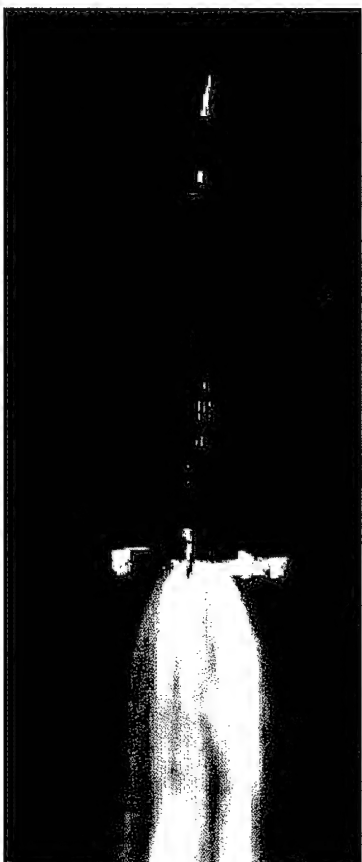
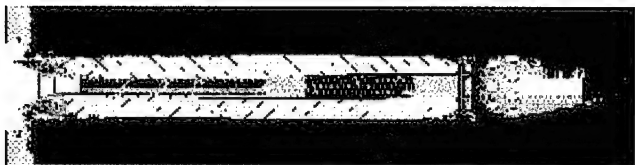


TERM-KE

■ Smart Tank Fired Munition

■ Major components:

- DU Penetrator
 - MMW Guidance
 - Rocket Motor Velocity Assist
- ### ■ Congressionally Funded
- ### ■ Competitor in Generic TERM Program





M919 APFSDS-T 25MM DU Kinetic Energy Round



OBJECTIVE:

Manage M919 &
Develop M910E1

- Performance Spec.
- Primex is the Prime Contractor
- Production Restart Scheduled for Oct 98
 - Swiss Propellant Qualified
- Tracer Visibility Inadequate
 - 12 Month Tiger Team Effort Underway to Correct
- Production Limited While Tracer Fix is Developed



Total Life Cycle Management Policy & Approach

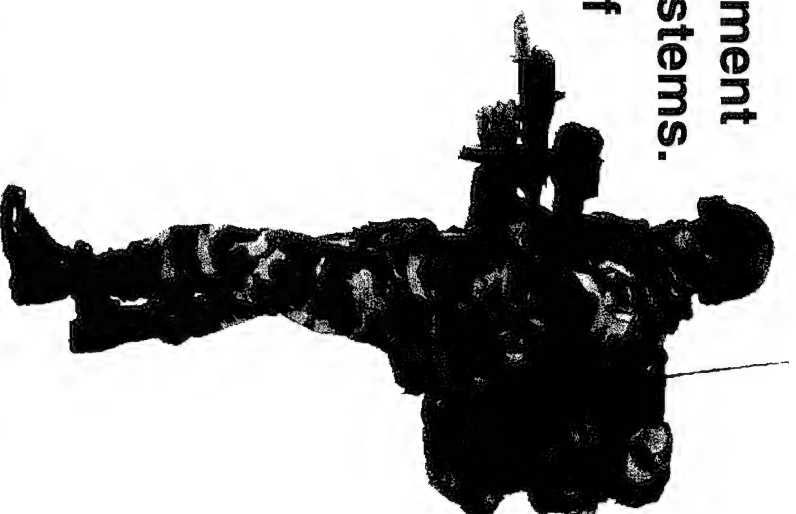
- Why are We Involved in Life Cycle Management?
- PEO GCSS Approach to Life Cycle Management





Management of Total Life Cycle - ACAT Systems

- PEOs, and MACOMs who Manage ACAT Systems are Responsible for the Management of the Total Life Cycle Costs for these Systems.
- Minimize Estimated Sustainment Costs of Developmental Systems
- Reduce the Actual Sustainment Costs of Fielded ACAT Systems
- Prepare Sustainment Budgets for Each System





Total Ownership Cost Reduction

- Vital to Realizing Modernization Objectives
- Element of Milestone Decision Review Process
- Top Ten Cost Drivers Identified
- PMs Have Begun Developing Strategies to Manage the Life Cycle Cost.

ASA (RDA) 4 May 1998

The Challenge is to Reform "Traditional Practices" and Implement Measures to Ensure PMs can Manage the Total LCM of their Systems



Industrial Base Policy Letter 98-1, Ammunition

To the Maximum Extent
Feasible, Transition
Government Owned
Assets to the Private Sector.

Rely on Private Sector to
Respond to Production &
Replenishment Contracts.

Develop Ammunition
Family Plans

Manage Ammunition Using
DoD's Life-Cycle Acquisition
Process.

Use Acquisition Reform
Initiatives.



Pacific Northwest National Lab (PNNL) Industrial Assessment of Industrial Base

**Acquire Ammunition
from the Commercial
Sector**

**Life Cycle Acquisition
Strategies Led by PM's**

**PEO
Management**

**Industry Focus:
How to Meet the Needs**

**Gov't Focus:
Total Needs for Munition**



PM Life Cycle Responsibility

■ The PM, or Their Agent, are the Wholesale Manager, Responsible from Milestone 1 thru Demil

Developing, Producing,
Tracking, Storing and
Distributing Munitions
to the Field.

Maintaining, Upgrading
and Resupply of the
Inventory.

Demilitarization,
Recycle and
Disposal.





What is the Goal?

- To Find Economies by Integrating Each Phase of the Life Cycle into One Strategy.
- Use Cost Savings to Promote Modernization.





Implementation

- PM Charters then Chairs an Integrated Process Team to Develop the Family Acquisition Strategy.
- The IPT Develops Business Plans to Optimize Life Cycle Readiness by Integrating R&D, Technology, Industrial and Facility Planning.
- The PEO Integrates the Business Plans into one Economical Munitions Business Plan.



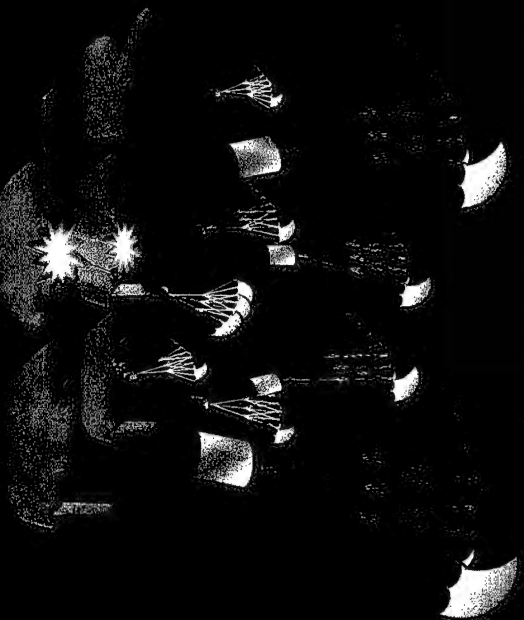


Smart Munitions - Killing More With Less

	<u>Fired</u>	<u>BDA</u>	<u>DPICM req'd (JMEMS)</u>
SADARM	220 Rounds	100 FV	3,600 Rounds

MSTAR	204 Rockets	35 Tanks	280 Rockets
		15 FV	60 Rockets
		52 Arty	<u>324 Rockets</u>

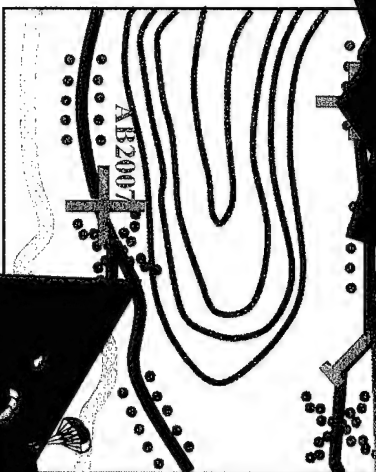
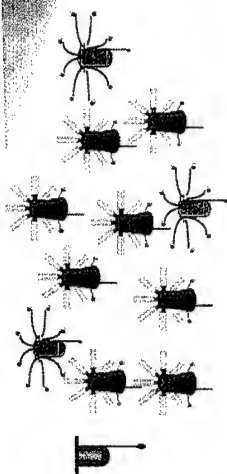
664 Rockets



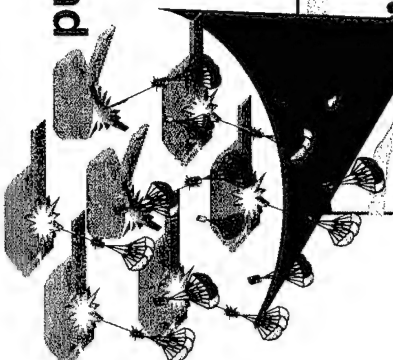


SADARM Killer Team

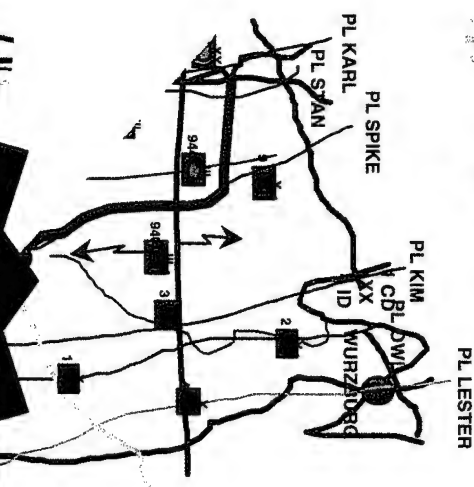
**Engineer Emplaced
Raptor Minefields**



**In an 8 Hour Period
SADARM Munitions
Destroyed Over 160
Artillery, 200 Tanks, and
260 Combat Systems.**



**Crusader Delivered
SADARM**





An Operational Concept for Shaping

- Operational Concept of “Find (Intel) - Kill (Fires) - Finish (Maneuver)” Validated in Various Simulations
 - Maneuvering to Exploit Effects of Fires Possible
 - Armor Formations Now Legitimate Target Sets for FA
- Division Effective in Optimizing Sensor-to-Shooter Linkages
 - Combined Arms Ambushes / SADARM Killer Teams Effective
 - Comanche-MLRS (Cmd and Atk Bn) Link Proven Winner
 - UAV Exceptional Targeting Platform
- SADARM and MSTAR Provide Capability to Strike Decisively Without Large Ammunition Expenditures

**Artillery Accounts for
40% of Division's Tank Kills**



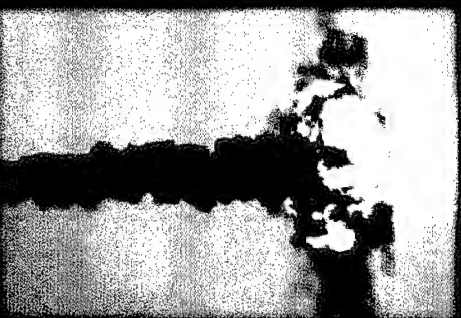
Thoughts I Want to Leave You With

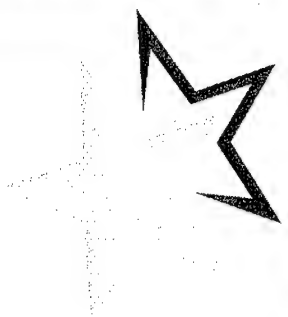
**PEO GCSS is Committed to Life
Cycle Management**

**Providing the Latest, Most
Lethal Ammunition to the
Soldier**

**Using the Savings for More
Ammunition Buys**

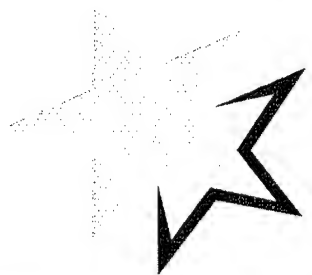
**Finding Efficiencies Through
Industry/Government Partnering
Need Industries Help in How
Best to Partner
Need to Strengthen
Communication**





ICAP

International Committee of Association for the Protection of the Environment



U.S. ARMY/GOVERNMENT PARTICIPANTS

Major General James W. Monroe
Commanding General

Brigadier General John J. Boyer
Deputy Chief of Staff, Administration

Mr. Milton McKinney
Ombudsman/Competition Advocate

Brigadier General John P. Geis
Commanding General

Colonel Lawrence J. Sova
Commander

NDIA MEMBERS

Major General Paul L. Greenberg
U.S. Army (Ret)
Vice President Operations
NDIA

Colonel Ira W. Click
U.S. Army (Ret)
Assistant Vice President, Operations
NDIA

MEMBERS AND SECTORS

Dr. Winston N. Brundige

★ Demilitarization

Mr. Floyd A. McCreight

★ Pyrotechnics

Dr. Peter A. Bukowick

Mr. Kenneth R. Morgan

★ Propellants & Explosives

★ Warheads & Rockets

Mr. Albert J. Calabrese

Mr. James R. Vieregge

★ Munitions Technology

★ Large Caliber

Mr. Victor Guadagno

Mr. Michael S. Wilson

★ Systems

★ Medium Caliber

Dr. Stephen L. Guina

Mr. Michael H. Yon

★ Fuzes

★ GOCO's

Mr. Rick Loghry, Co-Chair

Ms. Elaine Kennedy, Recorder

ICAP

ICAP

TOPICS DISCUSSED

- ❖ IMPROVING THE IMAGE OF AMMUNITION IN WASHINGTON
- ❖ GOCO/GOGO CONCERNS FOR THE FUTURE
- ❖ ACQUISITION POLICY AND BUSINESS ISSUES
- ❖ TRUST ISSUES/GOVERNMENT & INDUSTRY PERSPECTIVE
- ❖ PROCESS FOR EXCESSING INSTALLATIONS
- ❖ AMMUNITION PRODUCTION BASE ASSESSMENT
- ❖ DEVIL

The Challenge



Number Of Competitors + Amount Of Work + Capacity For Needs +
 Replenishment Needs + Desire For Multiple Year Contracts + Desire To
 Bundle + Requests To Direct Work - Industry Consolidation -
 + Vertical Integration + Smaller Profit Margins + Full &
 Open Worldwide Competition + Low Price Awards - Concerns For Foreign
 Competition Equity - Special Interest Groups -
 + Studies, Studies, Studies - Political Help - Conflicting
 Objectives - Attractiveness To Commercial Companies - ROI Uncertainties
 - Legal Paralysis - Cycle Time - Success Based On Words +
 - Cost Of Competition + Safety + Successful Defense
 Conversion + $\frac{1}{2}$ = Tilt

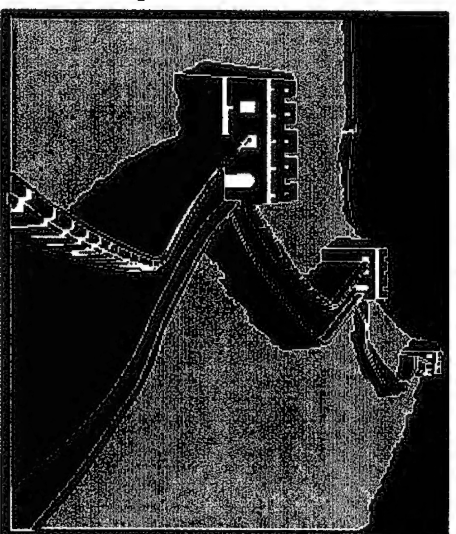
PROGRESS REQUIRES TRUST



TRUST IS FUNDAMENTAL TO SUCCESSFUL PARTNERING

WHAT IS THE EQUATION?

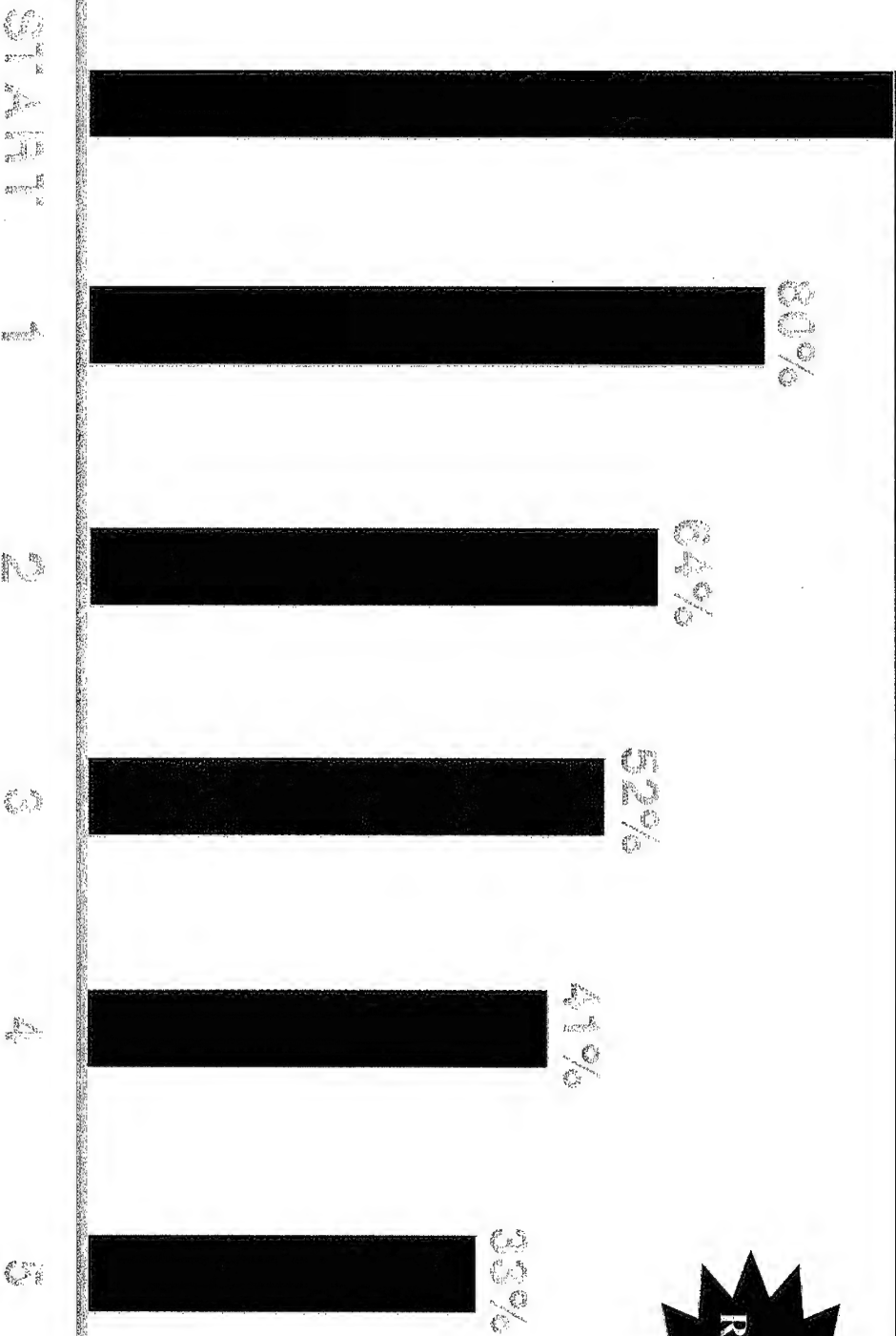
The Road To Trust



**Clear Objectives + Known Desired Results + Way to Measure
+ Team Building + One Accountable Voice + Walk The Talk +
Take Ownership + Fix Problems Together + Communicate
Problems + Try It + Take Some Risks - Don't Go Over My
Head + Tell Me The Whole Story - Don't Compete Just To Do
It - Surprises + Communicate + Attack Problem +
Communicate Success = Better Trust**

COMPETITION MAGIC

Current Price 100%



COMPETITION #

START 1

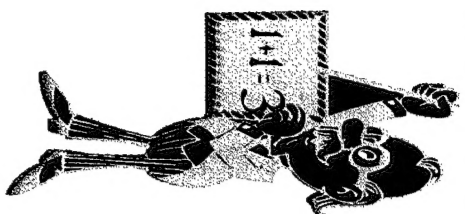
2

3

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5

WHAT'S WRONG WITH THIS EQUATION?



ANY EXISTING PRICE = MUCH BETTER PRICE
COMPETITION

IS IT TRUE THAT:

- ★ GOVERNMENT & CONTRACTORS WORK HARD TO REDUCE COST & IMPROVE EFFECTIVENESS CONTINUOUSLY?
- ★ THERE IS A FEASIBLE LIMIT FOR COST REDUCTION GIVEN ANY PROCUREMENTS T&C'S?
- ★ FIRM FIXED PRICE IS ALWAYS THE RIGHT ANSWER?
- ★ PERFORMANCE SPECS ELIMINATE THE NEED FOR OVERSIGHT AND PRESCRIPTIVE REGULATIONS?
- ★ ALL COST VARIABLES LIKE LABOR, BENEFITS, MATERIAL, AND OVERHEAD HAVE AN EQUAL PROBABILITY FOR REDUCTION?
- ★ MOST EASY OVERHEAD REDUCTIONS HAVE BEEN TAKEN?
- ★ THE PNPL RECOMMENDATION AND GOVERNMENT REORGANIZATION ARE THE ANSWERS?



SOME FUNDAMENTALS FOR CONTRACTORS

- ❖ MUST MAKE PROFIT
- ❖ COMPETING OPPORTUNITIES FOR MARKETING DOLLARS
- ❖ BOARDS WATCH OUT FOR STOCKHOLDER INTEREST
- ❖ RISKY TO GUESS AT BUDGETS, CUSTOMER STRATEGY, QUANTITY OF EACH ITEM, AND IMPACT OF RESTRUCTURING



התנועה הלאומית = אגודת ישראל

